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1960

EAST BARTON MOUNTAIN PUMPING STATION



**CITY OF HAMILTON
DEPARTMENT OF ENGINEERING
ANNUAL REPORT
1960**



UNIVERSITY OF ILLINOIS

FEB 7 1962

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B.SC., M.E.I.C., P.ENG.
CITY ENGINEER AND
MANAGER OF WATER WORKS

R. C. MONAGHAN
B.A.SC., M.E.I.C., P.ENG.
DEPUTY CITY ENGINEER



REFER TO FILE NO. EG-62-9

ATTENTION OF C. G. Furry

THE CORPORATION OF THE CITY OF HAMILTON
DEPARTMENT OF ENGINEERING
HAMILTON, ONTARIO

February 5th, 1962.

University of Illinois,
Library,
Urbana, Illinois.

Dear Sir:

Attn: Mr. W. H. Huff,
Serials Librarian

With respect to your enquiry about the 1950-51 issue of the Department of Engineering, City of Hamilton, Ontario, Annual Report, I wish to advise as follows.

During the years from 1951 through to 1958 inclusive no Annual Report was published. Since the last Report prepared prior to this date was a Bi-annual Report for the years 1949 and 1950, a copy of this report is enclosed together with a copy of the 1959 and 1960 Report. A copy of the 1961 Report will be forwarded to you when same is available.

Your name has been added to our complimentary mailing list.

Yours very truly,

City Engineer and
Manager of Water Works.

W.A.W. PG
Enc.

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THE CORPORATION OF THE CITY OF HAMILTON

PROVINCE OF ONTARIO

CITY COUNCIL 1959-1960.

MAYOR

Lloyd D. Jackson, L.L.D.

BOARD OF CONTROL

J. A. MacDonald
Mrs. A. M. Pritchard

S. L. Parker
A. H. R. McCoy

ALDERMEN

H. F. Brown, Q.C.
M. C. Cline
F. G. Dillon
Ray C. Edwards
R. A. Evans, Q.C.
J. Ross Fischer
Joseph Lanza
D. Lawrence

J. McLaren
B. W. B. Morison
John C. Munro
James A. Murdock
F. W. Partridge
Mrs. F. M. Standen
W. F. Thompson
F. W. Whitehouse

James A. MacDonald
(1960 only)

COMMITTEE ON WORKS

Controller J. A. MacDonald

Aldermen

W. F. Thompson, Chairman

John C. Munro
R. A. Evans, Q.C.
F. W. Partridge
D. Lawrence

Ray C. Edwards
J. Ross Fischer
J. A. MacDonald
Joseph Lanza

ADMINISTRATIVE AND SUPERVISORY STAFF

DEPARTMENT OF ENGINEERING

W. A. WHITTEN, B.Sc., P.Eng.,
M.E.I.C.
City Engineer and
Manager of Water Works

R. C. MONAGHAN, B.A.Sc., P.Eng.,
M.E.I.C.
Deputy City Engineer

WATER WORKS SECTION

J. R. G. LEACH, B.A.Sc., P.Eng., M.E.I.C.	Water Works Engineer
P. MARKO, B.A.Sc., P.Eng., Jr.E.I.C.	Assistant Water Works Engineer Design
D. M. MILNE	Water Works Superintendent (Distribution)
J. A. COULDEN	Chief Engineer, Water Works Purification Plant
G. A. GAULD	Chief Engineer, Ferguson Avenue and High Level Pumping Station

ELECTRICAL SECTION

D. D. DREW, B.Sc., P.Eng.	Electrical Engineer
---------------------------	---------------------

SEWER SECTION

W. L. PHILLIPS, B.A.Sc., P.Eng., Jr.E.I.C.	Sewer Engineer
C. S. KITCHEN, Int.B.Sc., P.Eng., M.E.I.C.	Assistant Sewer Engineer Design
J. KOSHURBA, B.Sc., P.Eng.	Assistant Sewer Engineer Construction
N. LINNINGTON	Superintendent of Pumping Stations

ROADWAY SECTION

J. H. BISHOP, B.Sc., P.Eng.	Roadway Engineer
G. J. STONE, B.A.Sc., P.Eng.	Assistant Roadway Engineer Design
J. FLAHERTY, B.A.Sc., O.L.S., P.Eng.	Assistant Roadway Engineer Construction

SURVEYS SECTION

A. H. GREENLEES, O.L.S., P.Eng.	City Surveyor
D. A. HARRINGTON, O.L.S.	Assistant City Surveyor

OFFICE SECTION

C. G. FURRY	Office Manager and Secretary Committee on Works
F. C. HUSK	Department Accountant
R. SMART	Storekeeper
V. SWISTON	Master Mechanic and Shop Superintendent

MUNICIPAL STATISTICS

Area of the City	31,566 acres
Population	258,576
Year of Incorporation	1846
Public Parks	48
Park Acreage	1,996.91
Royal Botanical Gardens	
Acreage inside the City	900
Acreage outside the City	1,000
Total Mileage of Streets	496.46
Paved Streets in Miles	
(a) Concrete Base	177.7
(b) Macadam Base	122.56
(c) Penetration	31.1
Stone and Unimproved Roads in Miles	163.1
Sidewalks in Miles	668.72
Sewers in Miles	463
Watermains in Miles	462.76
Number of Water Services	64,630
Number of Hydrants	5,132
Number of Water Meters	8,389



To His Worship Mayor L. D. Jackson
and the Members of the Council of the
Corporation of the City of Hamilton.

Members of the Council:

I have the honour of presenting the Annual Report of the activities of the Department of Engineering for the year ending December 31st, 1960.

I have chosen for the cover of the Report, a picture of the side of the building of the East Barton Mountain Water Works Pumping Station showing a figure representative of Aquarius, the Water Bearer, signifying a means of satisfying the deluge of complaints received from the Mountain residents about water shortages experienced during the summer months of previous years and being significant of the function of the pumping station.

In the past, Aquarius would have been a welcome sight to the irate Mountain resident who, on occasion, found himself without water.

Construction started on this pumping station in the summer of 1959 and it was officially opened on October 12th, 1960, although it was put into operation in June.

With this pumping station being put into

service as an improvement to the Hamilton Water Works System, the City is now capable of adequately supplying water to the Mountain area.

A major step was taken during 1960 with respect to improving the City's sewerage disposal system by the commencement of the construction of the City of Hamilton Sewage Treatment Plant located on Woodward Avenue. Contracts were awarded to Pigott Construction Company Limited in excess of \$3,000,000.00. Work has progressed very favourably during the year. Also, the design of the Eastern Interceptor trunk sanitary sewer was completed. This sewer will carry the sewage from the area east of Red Hill Creek to the Sewage Treatment Plant.

The decision of the Council to proceed with the rebuilding of old sidewalks and roadways resulted in the embarkation on the undertaking of a planned reconstruction programme. This programme is to be of a continuing nature, reviewed annually as to needs and requirements, with the matter of economic maintenance and the degree of deterioration being prime factors in the consideration of what works require reconstruction.

Over \$2,500,000.00 worth of reconstruction works were undertaken during 1960. This work placed a heavy

strain on the Department and in spite of this, it was carried out efficiently.

For some time in the past, it has been recognized that there was a definite need to co-ordinate the activities of the various utility companies with the activities of the Department of Engineering in order to facilitate the construction of roadways and services within the road allowance in a good and efficient manner. This need became more evident upon the introduction and undertaking of the referred to reconstruction programme. With this in mind, consultations were held between the Department of Engineering, the Bell Telephone Company, the Hamilton Hydro-Electric System and the United Gas Limited culminating in the establishment of a Utilities Co-ordinating Committee.

Many projects were started during 1960, most of which are outlined in the following pages of this Report. A brief list of the more important ones follows:

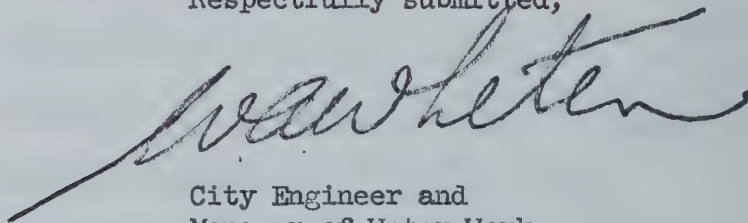
- (a) the design, preparation of drawings and specifications for sewers and watermains for the area bounded by Upper James Street, Mohawk Road, Upper Wellington Street and Limeridge Road.
- (b) the construction of the Ridge Street trunk sewer.
- (c) the construction of the West Mountain trunk sewer.

- (d) the construction of the Strathearne Avenue sanitary sewer.
- (e) cleaning and lining of the 30" trunk watermain from the Purification Plant along the pipeline right-of-way to Barton Street and Barton Street to Sherman Avenue.

I would like to express my appreciation for the efforts put forward by the Staff of the Department in the handling of the very extensive works programme carried out during the year 1960. I am most pleased with the very satisfactory manner in which they have fulfilled their duties.

I would further like to express our appreciation for the co-operation received from the Board of Control, the Committee on Works and the City Council.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read 'W. A. H. T. E. N.', is written over the typed name. The signature is fluid and cursive, with a long horizontal stroke extending to the left.

City Engineer and
Manager of Water Works.

REPORT OF THE DEPUTY CITY ENGINEER

The year 1960 saw the beginning in Hamilton of a much needed programme of roadway reconstruction the details of which are fully reported on in the Report of the Roadway Engineer. This year's reconstruction work consisted primarily of major arterial streets and generally speaking, with few exceptions, the original pavements on these streets were constructed prior to the year 1920.

The task of preparing a comprehensive inventory of all of the improved streets in the City was continued and it is expected that the related field work will be completed in 1961. A compilation of this inventory will provide a most useful guide for the planning of future reconstruction programmes. The inventory will also be of great assistance in the contemplated Traffic and Transportation Study which the Ontario Department of Highways has recommended be carried out in the greater Hamilton area.

The roadway construction work was performed expeditiously with a minimum of interruption to pedestrian and vehicular traffic. The Roadway Section must be commended for the efficient manner in which it carried out the largest roadway programme ever attempted in the history of the City. The experience gained during the year will be most helpful in the

planning and carrying out of similar programmes in succeeding years.

The Chedoke Expressway Technical Committee completed most of the study and planning stage of its work and it is expected that contracts will be awarded early in 1961 on the first phase of this major highway. This highway, designated as Highway No. 403 by the Ontario Department of Highways, will be a four lane divided highway connecting the Queen Elizabeth Way, west of Brant Street in Burlington, to Highway No. 2, west of Ancaster in the vicinity of Highway No. 53.

The portion of this highway through the City of Hamilton will be constructed, operated and maintained by the Department of Highways. The City, under agreement with the Department, will purchase the land needed for the right-of-way and transfer title to same to the Department of Highways.

It is expected the construction of the whole of the highway will take some five years to complete with the first portion being opened some time in 1963. The first portion to be completed and opened will be the section from the Queen Elizabeth Way to the Interchange with York Boulevard, north of the High Level Bridge over the Desjardins Canal.

The work of the Sewer Section primarily

involved the extension of sewer service into Concession Six of Barton Township annexed to the City at the beginning of the year. A great deal of this work was initiated for the purpose of providing sewer service to lands of the Board of Education on which the Board has scheduled the construction of new primary and secondary schools.

Several contracts were awarded for portions of the new Primary Sewage Treatment Plant and the work under these contracts progressed favourably throughout the year. It is a most welcome sight to watch the progress of this project as it marks the beginning of the effort to end the pollution of Hamilton Harbour. This programme must not stop with the completion of the Primary Sewage Treatment Plant. To effectively bring about a marked reduction in the volume of pollutants being discharged into the Harbour waters, we must proceed to full treatment of the sanitary and industrial wastes collected in the City's sewerage system.

When the full treatment of the City's sewage is an accomplished fact, progressive steps will have to be taken by our industries to provide treatment of wastes which they discharge directly to the Harbour.

The protection of one of this Province's most important natural resources, the Great Lakes System,

must be made the concern of all of the people of this Province if these natural resources are to be preserved and used for the growth of this City and the Province as a whole.

The completion of the Sewage Treatment Plant will allow full development of the large area of the City lying to the east of Red Hill Creek. To provide for an early start on this development, construction work commenced on the main trunk sewers required to service this section of the City.

The details of the construction programme carried out by the Sewer Section are fully reported on in the Report of the Sewer Engineer. He and the staff under him are to be congratulated for the manner in which they have accomplished their assignments.

The Water Works Section was also concerned with the same areas of the City as the Sewer Section. The policy of City Council and the Planning Board was to restrain the development of any area which could not be served with both sewer and water services. In this regard, adherence to this policy is most difficult at times as there are some areas on the Mountain which could be serviced by extension of the existing sewerage system but cannot be served with water while other areas have a reverse of the situation.

In my opinion, great care must be exercised in dealing with this problem. The prime consideration should be whether an area can be serviced with water.

It has been debated that the extension of sewers without the extension of water service is permissible where the sewers are required to overcome drainage problems. This would be logical provided only storm sewers were constructed but such is not the case with the construction of our separate sewer systems, for in these instances, both the storm and sanitary sewers, for economy and other reasons, are constructed in a common trench. The economical way, in my opinion, to overcome these drainage problems, until such time as both water and sewer services are available, is with properly designed, constructed and maintained systems of ditches and culverts. No one is going to benefit from having the sewers extended into an area if it is not possible to also, at the same time, provide water service to such an area.

The water supply problem to the Mountain was overcome with the opening of the new East Barton Mountain Pumping Station. To complete this stage of development for improved water service to the Mountain, it is recommended that steps be taken to proceed immediately with the construction of a ground level reservoir. The average daily consumption pre-

sently exceeds the existing storage capacity and it would be impracticable and most costly to continue increasing the storage capacity through the use of elevated structures.

The operation of the Water Works Purification Plant was seriously restrained on peak days by the lack of adequate intake capacity. Action to overcome this problem should receive priority consideration in the coming year.

The appointment of Mr. J. R. G. Leach, in February of this year, was most welcome and I look forward to many improvements in the operation of the Water Works under his capable guidance. He and his staff are to be congratulated on the work they have done this year.

The annexations which took effect at the beginning of the year considerably increased the volume of work related to what are termed "Neighbourhood Studies". Under these studies, the Planning Department has divided the new sections of the City into a number of Neighbourhoods with each Neighbourhood being comprised of two Township lots. The Planning Department develops roadway systems within these Neighbourhoods in keeping with the proposed land use.

The Neighbourhood plans are then submitted to this Department for examination and study to determine

whether the area can be properly served with sewer and water services along the proposed roadway patterns. The effectiveness of this work is most obvious in those areas where services were extended this year to the lands of the Board of Education, located within the newly annexed areas. To ascertain the suitability of the proposed roadway patterns in these Neighbourhood areas, extensive use is made of contour plans of the City and surrounding communities prepared from aerial photographic surveys. This study method considerably reduces the engineering costs related to the planning and development of the annexed areas because until such time as construction is proposed, there is no need to carry out expensive and time-consuming field work.

When a satisfactory Neighbourhood street pattern has been so determined, minor changes are permissible when plans of subdivision are laid down. However, great care must be exercised before any construction takes place to protect the interest of persons whose property will be affected by such construction in that any subsequent changes to the street pattern could result in excessive cost increases.

The continued expansion of our roadways, sewerage and water works systems must be predicated on the

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sound practice of engineering planning. We must constantly endeavour to see beyond the current work in hand to be certain of its part in the future.

Respectfully submitted,

R. C. MONAGHAN

Deputy City Engineer.



Interior - East Barton Mountain Pumping Station

REPORT OF THE WATER WORKS ENGINEER

The Water Works Section experienced a very active year in all phases of its work. The Water Works System continued to expand to meet the requirements of a growing City, resulting in the design and construction of many projects both large and small.

DESIGN AND CONSTRUCTION

East Barton - Construction of this new booster
Mountain Pumping Pumping Station was started in the
Station summer of 1959 and put into operation on June 14, 1960.
Despite the local carpenters' strike, (November 26, 1959 to February 16, 1960) the project was only fourteen days behind the date originally scheduled for completion. The station was officially opened on October 12, 1960 by His Worship, Mayor Lloyd D. Jackson.

During 1960, our design office, under the supervision of Mr. P. Marko, Assistant Water Works Engineer (Design), completed the reinforced concrete design work, checked and approved shop drawings for various parts of the building and equipment, prepared drawings and tenders for landscaping and supervised acceptance tests of the 10 M.G.D. Pump. The close co-operation of the following people and organizations who were associated with this project was much appreciated:

Proctor & Redfern, Consulting Engineers

City Architect's Department

Pigott Construction Company Limited

Robinson Contracting Company Limited

Professor D. G. Huber

The Engineering firm of Proctor & Redfern were engaged to co-ordinate the design and construction work of this project which was done on a cost plus fixed fee basis. They undertook the hydraulic design within the Pumphouse and aided in the writing of the specifications for the:

pumps

valves

42" headers

42" suction

42" discharge mains

tunnel

shaft

The City Architect's Department did the architectural design of the super-structure of the Pumphouse and produced an exceptionally pleasing and functional building for which they are to be complimented.

The General Contractor for the Pumping Station was Pigott Construction Company Limited, who along

with the sub-contractors worked quickly to bring the station to completion before the heavy pumpage demands of the summer.

All electrical design work for this project was done by our Electrical Engineer, Mr. D. D. Drew and his staff.

It was anticipated that due to the physical arrangement of the 42" discharge main, which rises to the top of the escarpment, that water hammer would be a problem with a sudden power failure. Professor D. G. Huber was retained to study this problem. Following the recommendation of his report, a 30" check valve was installed in the 42" watermain on Brucedale Avenue at Ottawa Street and a 14" anti-vacuum valve was installed at the top of the shaft south of Mountain Brow Boulevard to overcome all water hammer problems.

The 42" discharge main from the Pumphouse at the south side of the East Barton Reservoir to Brucedale and Ottawa Streets was installed by Robinson Contracting Company Limited. This work involved constructing a concrete lined tunnel, horseshoe in shape, approximately 781 ft. into the escarpment and a circular concrete lined shaft approximately 166 ft. high.

In addition to the above trunk main,

a 24" and 16" watermain on Brucedale Avenue from Ottawa Street to East 26th Street was constructed as a part of this project by Baldasaro & MacGregor Limited.

The total cost of the complete project is approximately \$1,465,000.

Special Projects - Designs, contract drawings and specifications were prepared and construction supervised for the following other special projects during this year:

Paving, Landscaping and Fencing
at Water Works Purification Plant

This work was awarded to Griffith & Crane Limited in the amount of \$109,804.98.

The Alexander Park Wading Pool

The contract for this work amounted to \$12,362.70 and it was constructed by the Tidey Construction Company Limited in time for the summer season.

Cleaning and Lining of 30"
Trunk Watermain

The 30" trunk watermain from the Purification Plant along the pipeline right-of-way to Barton Street and easterly to Sherman Avenue was cleaned and concrete lined. The Raymond Concrete Pile Company performed this work at a total cost of \$89,627.75. The increased carrying capacity of the main resulting from this work is equivalent

to having laid another 18" main parallel to it for the full length of 18870 ft.

Painting Elevated Tanks

The inside of the $1\frac{1}{4}$ M.G. and $3/4$ M.G. tanks at Fennel Avenue and the inside and outside of the Greenhill Avenue 100,000 gallon elevated tank were painted by Horton Steel Works Limited. The value of this work amounted to \$20,190.00, and it was completed in the late autumn of this year.

Restoration of 1859 Pumphouse

Tenders were prepared for the re-roofing of the Pumphouse, repointing of the stone walls, glazing, etc. This work is to be done in 1961 under the Winter Works Programme.

Trunk Watermain Survey

The Pitometer Associates Limited were retained by the City to make a survey of the trunk mains with respect to rates of flow, roughness coefficients and other data necessary to analyse and recommend improvements to the present trunk main system. The actual tests and measurements associated with this work were completed in 1960, however, the report is not scheduled to be received until 1961. The cost of this work by Pitometer Associates was \$10,115.00.

Lawn Watering System -
New City Hall

The landscaping was studied to design a system of underground pipes for the supply of lawn sprinklers. The design, layout and sizing of services for this was returned to the Architect's Department who had their general contractor install the system.

Rewiring 1932 Filter Building

This contract included the removal and reinstallation of electric lighting and existing electrically powered equipment. It was awarded to Niagara Engineering & Contracting Company Limited and was valued at \$39,798.00. This work was designed and supervised by the Electrical Engineer.

Watermains

Table I included in this report lists 57 watermains from 4" to 42" in diameter which were installed by contractors to our specifications and under our supervision during this year.

Watermains - Annexed Area

In addition, design, drawings and specifications were completed for the following streets in the area recently annexed to the City, south of Mohawk Road between Upper James Street and Upper

Wellington Street. The construction of these mains was started in 1960 and is expected to be completed in 1961.

Hess Street from Ridge Street Extension
to 700' Easterly

Hester Street from 700' east of Ridge
Street Extension to Upper Wellington
Street

Ridge Street from Hess Street to
Limeridge Road

Hess Street from Ridge Street to
Upper James Street

Manning Avenue from Hester Street to
Washington Street

Deschene Avenue from Hester Street to
June Street

Washington Street from Manning Avenue
to Deschene Avenue

June Street from 100' west of Deschene
Avenue to 160' east of Deschene Avenue

The above work contains 3,756 ft. of
6" watermain and 3,967 ft. of 8" watermain.

Proposed Works - Design studies on the following work
was undertaken with construction
expected to be completed in the following year.

New Filter Media and Surface
Wash Equipment

Preliminary construction drawings
and specifications were prepared for this work.

Chedoke Expressway Watermain
Relocation

Preliminary design work was done for the relocation of a 20" trunk watermain on Main Street West from Frid Street to Tope Crescent. A 4" watermain to the Sisters of St. Joseph's Convent was also studied for relocation.

New Intake Low Lift Pumping
Station and Future Trunk Mains

Work on preliminary designs was continued and a report of these studies is to be submitted during 1961.

Barton Reservoir
(11 M.G.)

As a result of the addition of the new East Barton Mountain Pumping Station to the system, it has been found that the 33 M.G. reservoir adjoining the 11 M.G. Barton reservoir cannot be filled to capacity without overflowing the smaller reservoir due to the difference in the overflow elevations between these reservoirs. Changes are expected to be made to correct this situation in 1961.

Longwood Road Bridge

Since Longwood Road was to be a main artery feeding the proposed Chedoke Expressway, our design staff was asked to investigate a possibility

of widening the existing two lane structure to a four lane structure with sidewalks. Preliminary structural designs and estimates were prepared.

St. Joseph's Drive Retaining Wall

A reinforced concrete wall was designed and contract drawings were prepared to support a sliding portion of St. Joseph's Drive east of Sherman Avenue. This retaining wall is to be constructed in conjunction with the repairing of St. Joseph's Drive at the Sherman Avenue Cut.

Staff Organization

At the end of this year, City Council approved the establishing of the position of Assistant Water Works Engineer (Construction). The filling of this position early in 1961 will be of great value in assuring that all Water Works construction projects receive the best possible supervision and inspection.

OPERATION

Water Works - Under the supervision of Mr. J. A.
Purification Plant Coulden, the Purification Plant was
operated efficiently and without particular incident during the year. During the summer, pumpage difficulties which might have occurred due to the limited capacity of the intakes were somewhat alleviated by relatively high lake levels. Favourable weather also prevented high pumpage demands.

A great improvement to the grounds was made this fall when Griffith & Crane Limited completed their contract for the grading, grubbing, seeding and fencing of the land surrounding the Purification Plant, also included was the paving of all the roads within this property.

The only significant change in the operation of the plant was a test of new chlorinating procedures during the winter months. In this test substantially higher dosages of chlorine were used in the treatment of the raw water and the results were very notable in two respects:

Firstly, a much better control for combatting tastes and odours is possible and better disinfection results.

Secondly, the condition of the filter beds was greatly improved. The additional chlorine sterilized the beds and prevented the algae and other bacterial growths which in the past have caused so much trouble and resulted in costly filter bed maintenance.

Our existing old equipment is not adequate to handle the larger dosages which are required during the high summer pumpages, and I would strongly recommend that new equipment be purchased.

The average daily pumpage this year was 46.7 million gallons, an increase of approximately 1.2 million gallons per day over the 1959 figure. Further statistics are shown in Tables III and IV.

Booster Pumping - The completion of the East Barton
Stations and
Reservoirs Mountain Pumping Station came just in
time to supply the heavy summer demand
of the growing population on the Mountain. The average
daily pumpage to the Mountain area during the year was 4.8
M.G.D. with a maximum rate of 16.3 M.G.D. Without the new
pumping station, such high demands as this could not have
been met. The large difference between average and peak
demands is caused almost entirely by the watering of lawns
and gardens. If this high demand ratio is allowed to
continue through increased population and land development
the City will be faced with heavy expenditures in order to
provide facilities to take care of lawn and garden watering
demands during the summer hot periods.

Painting of the interior of the two
Fennell Avenue Elevated Tanks as well as the interior and
exterior of the Greenhill Tank was completed in the fall.
The exterior of the Fennell Avenue tanks will require paint-
ing in 1961. Normal maintenance work was carried out at
all of the four booster pumping stations, three elevated

water tanks and four ground storage reservoirs. All of these installations are under the supervision of Mr. G. A. Gauld.

Pumpage reports are shown in Table V.

DISTRIBUTION SYSTEM

At the beginning of this year, Mr. L. S. Collison retired. In his position of Assistant Water Works Engineer, he had a very long service with the City starting in the year 1924 and his work in connection with the distribution system during this time was of great value to the Water Works Section.

In February, Mr. D. M. Milne assumed the position of Acting Water Works Superintendent (Distribution) replacing Mr. L. S. Collison.

The operation of the Distribution System continued to steadily expand during the year. Ten miles of additional watermains were installed. There are now 462 miles of watermains to maintain with more than 5000 hydrants and 4800 valves. The staff are also responsible for the installation and maintenance of all water services and the installation, reading, testing and repairing of water meters of which there are now more than 8000.

Other maintenance work such as the upkeep

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of the grounds at the East Barton reservoirs and the periodic cleaning of the reservoirs themselves is also carried out.

Respectfully submitted,

J. R. G. LEACH

Water Works Engineer.

TABLE I

WATERMAINS CONSTRUCTED DURING 1960

STREET	FROM	TO	WATERMAIN		VALVES NO.	SIZE	HYDRANTS	CONTRACTOR	PLAN NO.
			LENGTH	SIZE					
East Barton Pumping Station Victoria Avenue	Pumping Station Burlington Street	Brucedale & Ottawa St. Robert St. & West Ave.	4205'	42"	4	36"	--	Robinson Contracting	
			4311'	24"	3	24"	--		
			18'	16"	1	16"	--	Hamilton Excavating	V 75 WW
			44'	12"	1	12"	--		
			106'	6"	5	6"			
Brucedale Avenue	East 26th Street	Ottawa Street	5188.9'	24"	2	24"	--		
			997.2'	16"	4	16"	--	Baldasaro & MacGregor	B 154 WW
					3	12"			
Glow Avenue	185' E. of Dunn Ave.	Woodward Avenue	291.7'	12"	1	12"	1	Wm. Groves & Sons	G 42 WW
West 5th Street	312' S. of Brant- dale Avenue	Fennell Avenue	538.6'	12"	-	-	2	Wm. Groves & Sons	W 348 S
Briarwood Crescent	Bendamere Avenue	Sanatorium Road	595.5'	12"	2	12"	3	Cameron & Sims	B 367/8s
			670.5	8"	2	8"			
Bendamere Avenue	165' W. of Delmar	Briarwood Crescent	453.7'	12"	1	12"	2	Cameron & Sims	B 157 WW
			37'	6"	1	6"			
Grays Road	Barton Street	Southerly to City Limits	527'	12"	-	-	1	Baldasaro & MacGregor	G 40 WW
West 30th Street	150' S. of Mohawk	949' S. of Mohawk Road	702.2'	12"	1	12"	2	M.H.&B.	W 336 S
Strathearne Avenue	Beach Road	1640' Northerly	1547.2'	12"	1	12"	-	Robinson Contracting	S 86 WW
Mt. Albion Road	Hixon Road	240' Southerly	241.3'	12"	1	12"	-	Gavin Construction	M 109 WW
Main Street West	Highway No. 8	224' Southerly	209.3'	12"	1(sv)	12"	1	City Water Works	M 115 WW

<u>STREET</u>	<u>FROM</u>	<u>TO</u>	<u>WATERMAIN</u>		<u>VALVES</u>		<u>HYDRANTS</u>	<u>CONTRACTOR</u>	<u>PLAN NO.</u>
			<u>LENGTH</u>	<u>SIZE</u>	<u>NO.</u>	<u>SIZE</u>			
Jolley Cut Park	Mountain Brow	Concession Street	477.8'	12"	1	12"	--	Hamilton Excavating	J 34 WW
King Street East	Owen Place	Highway No. 20	1438.1'	12"	3	12"	3	Baldasaro & MacGregor	K 34 WW
Highway No. 20	King Street	180' Southerly	224.5	12"	1	12"	1	Baldasaro & MacGregor	K 34 WW
Elmwood Crescent	Briarwood Crescent	West 19th Street	312.5'	12"	1	6"	--	Cameron & Sim	B 368 S
Highway No. 20	Highway No. 8	King Street	3628.1' 136.8' 460.8'	12" 8" 6"	9 1	8" 6"	11	Baldasaro & MacGregor	H 85 WW
Clapham Road	Highway No. 8	850' Southerly	783'	8"	-	-	2	Wm. Groves	C 128 WW
Future Street	Mohawk Road	1600' Southerly	1644.6'	8"	3	8"	3	Cameron & Sim	W 345 S
Sanatorium Road	385' W. of Marcus	Briarwood Crescent	288.3'	8"	1	8"	1	Cameron & Sim	S 311 S
Fern Place	Kenilworth Avenue	End of Place	295.2'	8"	1	8"			
Doreen Court	Baith Avenue	End of Court	442.6'	6"	2	6"	1	Hamilton Excavating	F 150 WW
Sunrise Drive	Secord Drive	Heather Road	434.5'	8"	1	8"	1	Delmar Construction	S 100 WW
Secord Drive	Sunrise Drive	Rainbow Drive	316.2'	8"	1	8"	--	Delmar Construction	S 100 WW
Orphir Road	Rainbow Drive	257' W. of Sunrise Drive	506.8'	8"	1	8"	1	Delmar Construction	O 24 WW
Sunrise Drive	Orphir Road	Secord Drive	1456.8'	8"	4	8"	4	Delmar Construction	S 99 WW
Gailmont Drive	King Street	Orphir Road	320.9'	8"	1	8"	--	Delmar Construction	G 41 WW
Hester Street	700' E. of Ridge Street Extension	Wellington Street	2146.5'	8"	2	12"			

<u>STREET</u>	<u>FROM</u>	<u>TO</u>	<u>WATERMAIN</u>		<u>VALVES</u>		<u>HYDRANTS</u>	<u>CONTRACTOR</u>	<u>PLAN NO.</u>
			<u>LENGTH</u>	<u>SIZE</u>	<u>NO.</u>	<u>SIZE</u>			
Hess Street	Ridge Street	700' Easterly	96.7'	6"	6 2	8" 6"	6	Baldasaro & MacGregor	H 162 S
Ridge Street	At Mohawk Road	Intersection	100'	8"	1	8"	--	Baldasaro & MacGregor	R 138 S
Woodman Drive	Queenston Road	Heather Road	893.4'	8"	3	8"			
Heather Road	Woodman Drive	480' Westerly	193.7'	6"	2	6"			
Heather Road	Heather Road	104' Northerly	113.4'	4"	1	4"	3	Delmar Construction	H 87 WW
Westaway Place	West 15th Street	432' Easterly	424.5' 90'	6" 4"	1 -	6" -	1	Delmar Construction	W 133 WW
East 9th Street	650' S. of Welbourne	McElroy Road	683.6'	6"	-	-	1	Delmar Construction	E 339 WW
Buckingham Drive	West 30th Street	W'ly & S'ly to Mohawk Road	1453.7'	6"	3	6"	4	M.H.&B.	B 161 WW
West 15th Street	Sanatorium Road	Mohawk Road	741.6'	6"	2	6"	1	Cameron & Sim	W 344 S
Holmes Avenue	418' W. of Ireland	140' Westerly	144.5'	6"	-	-	--	Hamilton Excavating	H 113 S
Inverness Court	Arcade Crescent	End of Court	351.8'	6"	1	6"	1	Hamilton Excavating	I 32 WW
Arcade Crescent	150' N. of Inverness Court	Claremount Drive	246.1'	6"	-	-	1	Hamilton Excavating	A 27 WW
Winston Court	Royal Avenue	420' Southerly	486.1'	6"	1	6"	1	M.H.&B.	W 136 WW
West 3rd Street	195' S. of Mohawk	285' Southerly	274.2'	6"	-	-	1	Gavin Construction	W 339 S
Unnamed Road	Mohawk Road	940' Southerly	955'	6"	1	6"	3	Greenhill Const.	G 227 S
Glennie Avenue	Britannia Avenue	200' Northerly	202.5'	6"	1	6"	--	Wm. Groves & Sons	G 226 S
Fisher Court E. Fisher Court W.	Bendamere Avenue	375' Northerly	752.7'	6"	-	-	4	M.H.&B.	W 125 WW

<u>STREET</u>	<u>FROM</u>	<u>TO</u>	<u>WATERMAIN</u>		<u>VALVES</u> NO.	<u>HYDRANTS</u>	<u>CONTRACTOR</u>	<u>PLAN NO.</u>
			<u>LENGTH</u>	<u>SIZE</u>				
Adelaide Street	Macklin Street	235' Westerly	222.8'	6"	1	1	Gavin Construction	A 189 S
McElroy Road	Intersection	East 8th and East 9th	63.5'	6"	2	--	Wm. Groves & Sons	M 114 WW
Seventh Avenue	East 34th Street	East 36th Street	349.9'	6"	1	1	Delmar Construction	S 102 WW
West 2nd Street	200' S. of Mohawk	425' S. of Mohawk Road	256'	6"	-	--	Delmar Construction	W 97 WW
Lang Street	Main Street	Reid Avenue	1057.6' 921.4'	6" 4"	3 5	3	Robinson Contracting	R 136 S
Senior Citizens Apartments	Macassa Lodge	(Ninth Avenue)	187.6' 178'	6" 4"	1		Delmar Construction	S 354 S
Holbrook Road	Sanatorium Road	End of Road	719.4'	6"	1	2	Delmar Construction	H 88 WW
Edith Avenue	100' S. of Ellis- worth Drive	Nova Drive	762.6'	6"	3	1	Hamilton Excavating	E 65 WW
Nova Drive	Edith Avenue	350' Easterly	336.6'	6"	1	1	Hamilton Excavating	E 65 WW
Rainbow Drive	Second Drive	Orphir Road	1386.6'	6"	3	4	Delmar Construction	R 64 WW
Robroy Avenue	Gailmont Drive	Sunrise Drive	345.3'	6"	3	--	Delmar Construction	R 67 WW
Mohawk Road	300' W. of West 30th Street	Buckingham Drive	682.8'	6"	1	1	M.H.&B.	M 113 WW
Twilight Court	Sunrise Drive	End of Court	154.2'	4"	1	--	Delmar Construction	S 100 WW
Starlight Court	Orphir Road	End of Court	189.6'	4"	1	--	Delmar Construction	O 24 WW
West 5th Street	Mohawk Road	Wemby Road	1929.6'	4"	5		Delmar Construction	W 338 S
Orphir Road	Gailmont Drive	Easterly	340.7' 211.8'	8" 6"	1 1	1	Wm. Groves & Sons	O 26 WW

TABLE II

SUMMARY OF 1960 WATERMAIN CONSTRUCTION

<u>Location</u>	<u>Size</u>	<u>Length</u>	<u>Valves</u>	<u>Hyds.</u>	<u>TOTALS</u>		
					<u>Mains</u>	<u>Valves</u>	<u>Hyds.</u>
<u>LOW LEVEL</u>	4"	1378.6	8	--			
	6"	3858.3	12	36			
	8"	5189.1	13	--			
	12"	7897.9	16	--			
	16"	18.0	1	--			
	24"	4311.0	3	--	22652.9	53	36
<u>MIDDLE LEVEL</u>	6"	853.4	2	3			
	12"	209.3	1	--	1062.7	3	3
<u>HIGH LEVEL</u>	12"	477.8	1	--	477.8	1	-
<u>MOUNTAIN LEVEL</u>	4"	2197.6	5	--			
	6"	9923.9	28	43			
	8"	5145.1	15	--			
	12"	2646.5	11	1			
	16"	997.2	4	--			
	24"	5188.9	2	--			
	42"	4205.0	--	--			
	36"	--	4	--	<u>30304.2</u>	<u>69</u>	<u>44</u>
<u>TOTALS ALL LEVELS</u>					50292.6	126	83

Totals by Sizes

4"	3576.2
6"	14635.6
8"	10334.2
12"	11231.5
16"	1015.2
24"	9499.9
42"	4205.0

TOTALS ALL LEVELS 54497.6 - 10.32 Miles

TABLE III

WATER WORKS PURIFICATION PLANT

RAW WATER STATISTICS - 1960

Month	Daily Pumpage			Total Pumpage M.G.	Wash Water Used M.G.	Number of Washes	Turbidity Days over 10 P.P.M.	Temperatures °F		Average Lake Level
	Average M.G.D.	Maximum M.G.D.	Minimum M.G.D.					Average	Maximum	
January	43.5	47.5	36.3	1348.5	79.1	622	15	34.5	37.5	244.97
February	43.4	46.4	36.0	1259.9	51.1	451	6	34.0	35.0	245.30
March	42.7	45.6	36.2	1324.9	57.3	471	8	32.5	35.0	245.43
April	42.2	48.8	33.6	1267.7	81.4	651	9	37.0	43.0	246.35
May	43.8	52.8	35.3	1360.5	45.9	343	0	45.0	50.0	247.14
June	51.5	57.8	38.5	1545.9	38.4	283	0	50.0	56.0	247.24
July	52.3	62.4	36.5	1623.0	60.2	458	0	47.5	59.0	246.76
August	52.5	57.8	38.3	1629.7	47.5	345	0	61.0	70.0	246.14
September	54.0	61.4	43.1	1620.0	38.2	298	0	60.0	67.0	245.54
October	47.3	54.8	36.3	1467.0	43.5	337	0	50.0	60.0	245.13
November	44.6	47.7	33.8	1338.1	44.6	345	3	40.5	42.0	245.09
December	43.0	46.4	36.5	1333.4	34.6	273	1	36.0	39.0	244.88
				17118.9	621.8	4877				245.83

TABLE IV
WATER WORKS PURIFICATION PLANT
TREATED WATER PUMPAGES

	<u>1959</u>	<u>1960</u>
Total pumpage for year	16,639,810,000 gal.	17,118,930,000 gal.
Average daily pumpage	45,588,520 gal.	46,773,196 gal.
Increase per day - 1960 over 1959		1,184,676 gal.
Maximum pumpage in 24 hours	58,110,000 gal.	62,440,000 gal.
Minimum pumpage in 24 hours	43,050,000 gal.	33,600,000 gal.
Maximum hourly pumpage	59,040,000 gal.	64,800,000 gal.
Average total head	195.8 ft.	196.7 ft.
Maximum total head for 24 hours	208.0 ft.	206.0 ft.
Minimum total head for 24 hours	188.0 ft.	180.0 ft.
Average pressure on mains	80.8 lbs.	82.0 lbs.

MONTHLY PUMPAGE REPORT (GALLONS)

	<u>1959</u>	<u>1960</u>	Increase + Decrease -
January	1,220,020,000	1,348,510,000	128,490,000 +
February	1,132,600,000	1,259,920,000	127,320,000 +
March	1,213,790,000	1,324,920,000	111,130,000 +
April	1,200,480,000	1,267,730,000	67,250,000 +
May	1,345,200,000	1,360,520,000	15,320,000 +
June	1,495,700,000	1,545,970,000	50,270,000 +
July	1,675,690,000	1,623,050,000	52,640,000 -
August	1,708,420,000	1,629,700,000	78,720,000 -
September	1,570,880,000	1,620,060,000	49,180,000 +
October	1,410,460,000	1,467,030,000	56,670,000 +
November	1,316,040,000	1,338,100,000	22,060,000 +
December	1,350,530,000	1,333,420,000	17,110,000 -
TOTALS	16,639,810,000	17,118,930,000	479,120,000 +

TABLE VI

LENGTH AND DIAMETER OF WATERMAINS AND NUMBER OF VALVES,
HYDRANTS AND SERVICES TO DECEMBER 31, 1960

SIZE AND LENGTH OF MAINS

Location	48	42	36	30	24	20	18	16	12	10	8	6	4	2	1	Total
Low Level Districts	20345	5655	20579	42508	29674	45486	26603	4466	114174	13439	46098	757078	11660	4917	16360	1159042
Middle Level Districts				6616	3801	28868	7780	11021	82667		11552	399739	4603	3550	2130	562327
High Level Districts									9542		676	56690	1822	1300	1114	71144
Mountain District West									2602	1446	5145	9280	2020			20493
Mountain District East		4205			9500	4092		16106	125382		39784	416638	6130	950		622787
Beach Pump Sta. Yard	126		151	871	30	224	982		74			1294	218			3970
TOTAL	20471	9860	20730	49995	43005	78670	35365	31593	334441	14885	103255	1640719	26453	10717	19604	2439763 (462.76 miles)

SIZE AND NUMBER OF VALVES IN CITY

Location	42	36	30	24	20	18	16	12	10	8	6	4	2	1	Total
Low Level District															
Middle Level District		12	37	21	31	24	20	255	25	95	1522	34	12	49	2107
High Level District			6	15	23	7	13	144		25	887	19	5	7	1151
Mountain District West							2	9		5	116	7	3	1	143
Mountain District East		4		2	7		25	7	2	20	21	10			60
Beach Pump Sta. Yard	5	1	10	1	11	3	2	217		84	972	11			1322
TOTAL	5	17	53	39	72	34	62	602	27	229	3528	82	20	57	4827

TABLE VI cont'd

CITY OWNED HYDRANTS IN WATERMAIN SYSTEM

Type	Mountain Level		High Level	Middle Level	Low Level	Total
	East	West				
Frost Jacket	612	5	83	557	1652	2909
Bawden	336			31	90	457
Hepburn	6			43		49
L. O. Style				225	157	382
S. O. Style			47	168	261	476
Ground Top			25	51	10	86
Darling	333	43	5	29	177	587
McAvity	<u>152</u>	<u>—</u>	<u>—</u>	<u>25</u>	<u>9</u>	<u>186</u>
TOTAL	1439	48	160	1129	2356	5132

HYDRANTS

3 way hydrants - 4615

2 way hydrants - 517

TOTAL - 5049

CLASSIFICATION OF SERVICES IN USE TO DECEMBER 31, 1960

Size	<u>1/2"</u>	<u>3/4"</u>	<u>1"</u>	<u>1 1/2"</u>	<u>2"</u>	<u>4"</u>	<u>6"</u>	<u>8"</u>	<u>10"</u>	<u>12"</u>	<u>16"</u>	Total
Indus. & Mfg.	243	77	140	38	204	56	35	13	5	1	1	813
Apt. Bldgs.	732	183	198	79	60	11						1263
Stores & Apts.	2649	137	111	11	51	6		1				2966
Commercial	473	78	92	8	69	10	1					731
Gas Stas. - Garages	288	86	27	1	5							407
Hotels and Motels	29	21	15	7	14	2	1					89
Clubs	33	11	11	2	10							67
County	67	4	2	1	1	1	4	1	3			84
Utilities	30	5	13	8	28	8	6	1				99
Schools	2	4	8	3	75	14	2	1	1			110
City Property	26	27	40	5	63	14	5					180
Miscellaneous		2	6	2	36	4		1				51
Fire Services					11	22	261	91	8	2		395
Churches	182	21	21	2	7	1						234
Houses	56171	603	339		14							57127
Laundro Mat's					14							14
TOTAL	60925	1259	1023	167	662	149	315	109	17	3	1	64630

CLASSIFICATION OF METERS IN USE TO DECEMBER 31, 1960

Size	<u>5/8"</u>	<u>3/4"</u>	<u>1"</u>	<u>1 1/2"</u>	<u>2"</u>	<u>4"</u>	<u>6"</u>	<u>8"</u>	<u>10"</u>	Total
Industrial & Mfg.	243	77	140	38	204	56	35	10	7	810
Apartment Bldgs.	732	183	198	82	73	4	1			1273
Stores & Apts.	2649	137	112	11	50	6		1		2966
Commercial	473	78	92	20	57	8	1			729
Gas Stas. - Garages	288	86	24	1	6					405
Hotels & Motels	29	21	15	7	16	1	1			90
Clubs	33	11	11	3	7					65
County	67	4	2	1	1	1	4	1	3	84
Utilities	30	5	13	8	28	8	6	1		99
Schools	2	4	8	3	82	6	2	1	1	109
City Property	21	11	32	5	59	14	5			147
Miscellaneous		2	6	3	38	4		1		54
Churches	182	21	21	2	7					233
Houses	1229	48	28	1	5					1311
Laundro Mat's					14					14
TOTAL	5978	688	702	185	647	108	55	15	11	8389

TABLE VII

NEW SERVICES AND METERS INSTALLED IN 1960

	<u>1 1/2"</u>	<u>5/8"</u>	<u>3/4"</u>	<u>1"</u>	<u>1 1/2"</u>	<u>2"</u>	<u>4"</u>	<u>6"</u>	<u>8"</u>	<u>10"</u>	<u>12"</u>	<u>16"</u>	<u>Total</u>
Services Installed	1131		23	59		79	26	6	4		1	1	1330
Meters Installed		290	33	46	18	77	7	3		2			476

MAINTENANCE OF WATERMAINS AND SERVICES

<u>Watermains</u>		<u>Services</u>	
<u>Size</u>	<u>Breaks</u>	<u>Leaks</u>	<u>Size</u>
4"	3	4	1"
6"	98	22	2"
8"	5	3	3"
10"	2	2	4"
12"	8	29	1"
16"	0	7	2"
18"	0	5	4"
20"	0	25	6"
24"	0	10	
30"	0	25	
36"	0	7	
	<u>116</u>	<u>139</u>	<u>Repairs</u>
			541
			9
			38
			16
			3
			7
			<u>614</u>

TABLE VIII

WATER WORKS

Revenues & Expenditures

1960

R E V E N U E S

\$1,055,569	Flat rate water
2,104,266	Metered water
150,550	City of Hamilton - fire protection
10,021	Unclassified
<u>11,319</u>	Winter Work Incentive Programme
<u>\$3,331,725</u>	

E X P E N D I T U R E S

\$ 315,779	Administration
557,939	General Expense
18,371	Reservoirs and elevated tanks
99,281	Booster pumping stations
315,055	Water Works purification plant
167,560	Specific projects
<u>19,347</u>	New equipment
<u>\$1,493,332</u>	Total Water Works Expenditures
1,494,932	Debenture principal and interest charges
<u>343,461</u>	Provisions for depreciation and replacement
<u>\$3,331,725</u>	

ANALYSIS OF WATER RATES REVENUE - 1960

1. Residential - Metered.....	\$ 176,637.36	
Churches & Charitable Inst.-Metered...	21,685.11	
Flat Rate Charges.....	<u>1,206,118.93</u>	\$1,404,441.40
2. Commercial & Industrial - Metered....	<u>\$1,697,346.00</u>	\$1,697,346.00
3. Own Municipality - Metered -		
Buildings.....	\$ 43,680.35	
Schools.....	35,364.13	
Parks.....	10,080.35	\$ 89,124.83
4. Other Governments - Metered -		
Institutions.....	\$ 23,905.62	
Public Buildings.....	7,166.23	
Outside Municipalities...	<u>88,400.58</u>	<u>\$ 119,472.43</u>
		<u>\$3,310,384.66</u>
Arrears (Flat Rate & Meter)		
December 31, 1960.....	\$ 42,021.67	

REPORT OF THE SEWER ENGINEER

During 1960, the Sewer Section of the Department of Engineering of the City of Hamilton was quite busy in carrying out the design, construction, maintenance and operation of the City's sewerage system.

SEWER DESIGN

Nash Road
Sewerage System

- The first major project of 1960 was the design of the Nash Road sewerage system.

This is the first major trunk sewer in the area annexed from Saltfleet Township east of Red Hill Creek. This project covered the sewers on Nash Road from Brampton Street to King Street with storm and sanitary sewers on Barton Street from Red Hill Creek to Nash Road and on the C.N.R. Right-of-way from Red Hill Creek to Nash Road. This system will service an area of approximately 564 acres of the area east of Red Hill Creek. Of this, the major portion, 520 acres, will discharge to Red Hill Creek along Barton Street. The design calculations indicated that an 84" diameter sewer on Barton Street would be required to carry the flow to Red Hill Creek. The sanitary sewers on Nash Road flow northerly from King Street to Brampton Street where it will discharge into the Eastern Interceptor Trunk Sanitary Sewer. The design, drawings and specifications were prepared for Nash Road and tenders were invited with the tender closing on August 31, 1960.

Eastern Inter-
ceptor Trunk
Sanitary Sewer

- The next project to be carried out was the design and preparation of drawings and speci-

fications for the Eastern Interceptor Trunk Sanitary Sewer.

This is a major trunk sewer that will carry the sanitary sewage from the area east of Red Hill Creek to the New Sewage Treatment Plant located at the corner of Woodward Avenue and Brampton Street (Burlington Street). After considerable investigation and design calculations, it was found that this trunk sewer would have to service an area of 30,911 acres. This is broken down into two major areas:

(a) The area of Saltfleet east of Red Hill Creek containing 10,130 acres.

(b) The Red Hill Creek area where it is proposed to run a sanitary sewer from Brampton Street southerly to the escarpment. The area tributary to the proposed Red Hill Creek trunk sewer is 20,781 acres. This includes the area of Barton Township, Fennel Avenue area, West Mountain area, and the Mount Albion Quigley Road area.

It was found that in order to service the above areas, this trunk sanitary sewer would have to be built in a tunnel and with the size ranging from 60" in diameter at Gray's Road to 102" in diameter entering the Sewage Treatment Plant Site on Woodward Avenue.

The firm of E. M. Peto & Associates were engaged to investigate the soil conditions along the route of

this proposed trunk sewer. From their investigation, it was found that the westerly portion of this work would be in shale and the portion east of Lake Avenue would be in good clay. Two troublesome sections were found and more detailed soils information was required on these two areas. The one area is through the Red Hill Creek Valley and the other is through the Stoney Creek Valley where it was found that the ground was fairly soft. It is anticipated that the tunnelling of the sewer through these two areas may have to be carried out under compressed air methods. The design, drawings and specifications were finished and tenders called in time for the work to commence as part of the City's Winter Works Programme.

Sewers: - The next project was the design of the
Upper James St, sewers in the area bounded by Upper James
Mohawk Road, Street, Mohawk Road, Upper Wellington
Upper Wellington St.,
Limeridge Road Street and Limeridge Road. The prepara-
tion of drawings and specifications for the work was finished
and tenders called in time for inclusion in the Winter Works
Programme.

Neighbourhood - Studies have been carried out in co-
Lay-outs operation with the City Planning Depart-
ment on neighbourhood lay-outs for the newly annexed area of
Barton Township. This continued from 1959 and the majority of

Concession 6 has been completed. These neighbourhood plans are preliminary only, and amendments to them are continually being made as land developers become interested in certain parcels of land within the neighbourhood areas.

Subdivisions

- All draft plans of subdivisions received by the Planning Department were checked.

The design and preparation of the necessary drawings was almost completed on those subdivisions on which the Department of Engineering had started work prior to the decision of City Council to discontinue this service. On all future subdivisions the engineering will be done by consulting engineers.

SEWER CONSTRUCTION

During 1960 several large trunk sewers were constructed under our supervision.

Trunk Sewer
Ridge Street

- The first of these sewers was the storm and sanitary sewers on Ridge Street Extension

from Mohawk Road to Hess Street and on Hess Street and Hester Street from Ridge Street Extension to Upper Wellington Street. The contract in the amount of \$138,688.14 was awarded to Baldasaro & MacGregor on February 9, 1960. This amount included \$132,590.04 for sewers and \$6,098.10 for watermains. This contract called for the installation of storm sewers as follows:

approx. 345 feet of 6'0" x 6'6" monolithic concrete block sewer,

1037 feet of 72" reinforced concrete pipe,

214 feet of 66" diameter pipe,

558 feet of 60" diameter pipe, and

1229 feet of 54" diameter pipe.

Constructed separately in the same trench and alongside the storm sewer, a sanitary sewer varying in diameter from 12" to 18" was installed. The work was undertaken during the early part of the year and completed in September, 1960.

Trunk Sewer
West Mountain

- The other major trunk sewer constructed early in 1960 was the West Mountain

area. A contract in the amount of \$196,890.35 was awarded to Cameron & Sim Limited on March 8, 1960. This amount included \$185,319.00 for sewers and \$11,571.35 for watermains. This trunk sewer was constructed on:

Briarwood Crescent from Bendamere Avenue to San Road and on San Road from Briarwood Crescent to West 15th Street and on West 15th Street from San Road to Mohawk Road and on Future Street from Mohawk Road approximately 150 feet east of West 15th Street to 1500 feet southerly.

The main purpose of installing this trunk

sewer at this time was to provide service for the Board of Education properly lying south of Mohawk Road, upon which the Board intends to construct immediately the Westmount High School. The work commenced early in the year and was completed on October 20, 1960.

Strathearne Avenue Sanitary Sewer - Another large sewer project was the

installation of sanitary sewer on Strathearne Avenue from Beach Road to approximately 2410 feet northerly. A contract for this work in the amount of \$61,286.60 was awarded to Robinson Contracting (Hamilton) Limited, to be undertaken as part of the Winter Works Programme. This amount included \$56,544.20 for sewers and \$4,742.40 for water-mains. The depth of this sewer varied from 37 feet at Beach Road to approximately 25 feet at the northerly end. Due to the proximity of the existing storm sewer on the west side and existing gas mains on the east side of Strathearne Avenue, considerable difficulty was experienced at the start of this project with shoring needed to hold the sides of the trenches. After this initial problem was overcome, work on the project progressed quite satisfactorily to its completion on July 15, 1960.

Sewers Undertaken As Part of the 1960-61 Winter Works Programme - In the fall of 1960 several sewer contracts were called as part of the 1960-61

Winter Works Programme. The first contract awarded was for the installation of the trunk storm and sanitary sewers forming the inchoation of the Nash Road Sewerage System. This contract calls for the installation of 862 feet of 84" diameter reinforced concrete storm sewer pipe which is the largest machine-made pipe to date installed in Ontario. This pipe will be installed on Barton Street between Red Hill Creek and Nash Road. At Pottruff Road there is designed a reverse curve in this large sewer with a junction chamber in the center of the curve. This contract also called for the installation of approximately 2000 feet of 60" diameter pipe, 1300 feet of 54" diameter pipe, 650 feet of 48" diameter pipe, 307 feet of 36" diameter pipe and 4300 feet of storm sewer varying in size from 30" in diameter to 12" in diameter. Constructed separately in the same trench, a sanitary sewer was laid varying in size from 10" in diameter to 21" in diameter. The contract was awarded to S. McNally & Sons Limited on September 13, 1960 at a cost of \$275,059.50. This amount included \$268,024.68 for sewers and \$7,034.82 for watermains. Construction started on November 14, 1960 and was progressing favourably at the end of the year.

The other major contracts awarded under the Winter Works Programme were two contracts calling for the



84" Storm Sewer on Barton Street, between
Nash Road and Red Hill Creek

installation of storm and sanitary sewers in the area bounded by Upper James Street, Mohawk Road, Upper Wellington Street and Limeridge Road. This area was divided into two contracts. One contract covering the installation of sewers and water-mains in the area between Hess Street and Mohawk Road, was awarded to Cameron & Sims on October 11, 1960. The amount of this contract is \$75,701.30. This amount included \$66,970.25 for sewers and \$8,731.05 for watermains. The other contract covering the installation of sewers and watermains in the area from Hess Street to Limeridge Road was awarded to Robinson Contracting Company Limited on November 9, 1960. The amount of this contract is \$133,478.95. This amount included \$121,014.90 for sewers and \$12,464.05 for watermains. Work on both of these contracts was started toward the end of 1960 and will be continued in 1961.

Sewage Treat-
ment Plant

- Good progress was made during 1960 on the construction of the new Sewage Treatment Plant which is being built on the east side of Woodward Avenue north of Brampton Street. The interceptor sewer required in connection with this Plant constructed on Burlington Street, Beach Road, Parkdale Avenue and Glow Avenue was completed during 1960 by Schwenger Construction Company Limited with the exception of some work on regulator chambers and the final

connections which will have to be made after the Sewage Treatment Plant is in operation. The outfall sewer for the Sewage Treatment Plant was completed by S. McNally & Sons during 1960.

Contract For Pump House, Detritor Building, Etc. - Work commenced early in January on contract No. 4 for the construction of the pumphouse, detritor building, clarifiers, chlorine contact chamber and the chlorine unloading facilities awarded to Pigott Construction Company Limited on December 8th, 1959. Work progressed quite satisfactorily during the year 1960 and to date the value of the work completed on this contract is \$1,600,000.00. It is anticipated that this contract will be completed by the fall of 1961.

Construction of Offices, Etc. - Another contract, Contract No. 5, was called for the construction of the Sewage Treatment Plant offices and the Municipal Laboratories. This contract was awarded to Pigott Construction Company Limited for the amount of \$300,000.00 on November 9, 1960 and to date the footings have been poured and the steel framework has been erected.

Sludge Disposal - On June 14, 1960 the Consulting Engineers for the City, Proctor & Redfern, submitted a report to the Board of Control and City Council, recommending that the Zimmerman process be used in the new

Sewage Treatment Plant for the disposal of sludge. It was the feeling of the Council that further investigation and study should be made on this recommendation and after a number of special meetings decided to lay this matter over until 1961.

Miscellaneous
Construction

- The construction staff supervised the installation of a total of 5.71 miles of sewers in 1960. A list of these works is appended hereto. This makes a total of 463.0 miles of sewers in the City of Hamilton as of December 31st, 1960. These sewers were constructed by local contractors and ranged in size from 10" in diameter to 6' x 6'6" monolithic concrete box sewers. Most of the contracts included the laying of private sewer connections from the main sewer to the street line and catch basins. In many instances for reasons of efficiency and economy watermain construction works were awarded together with sewer works in the same contract.

Inspection

- The Bell Telephone Company, the Hamilton Hydro Electric System and United Gas Limited constructed new underground conduits and utilities for which locations were approved and the work supervised by an inspector in order to protect the interests of the City. Private sewer connection work was carried out by bonded sewer

contractors, and under the direct supervision of Mr. L. Campbell, private drain inspector. There was a total of 59 such contractors registered with the City in 1960. A total of 1205 private sewer connections were installed requiring 1804 inspection calls.

SEWER MAINTENANCE

This work was supervised by Mr. G. Hunter and Mr. T. Crawford, sewer maintenance foremen. The work includes construction and repairs of sewers, catch basins and manholes, investigation of complaints from the public respecting flooding, sewer odours and roadway settlements. It also includes the maintenance of sewer regulators, flushing of syphons, the securing of earth borings for new construction and the machine cleaning of sewers to remove roots, dirt, etc.

Sewage Pumping Stations

- The sewage pumping stations were operated under the direction and supervision of Mr. N. Linnington, Superintendent. They were operated very satisfactorily during the year with only minor repairs required for machinery and the electrical controls. Regular maintenance and inspections were made of the machinery and buildings. Pumpages and costs of operating these stations are listed on the schedule appended hereto.

Depew Street
Sewage Disposal
Plant

- The Depew Street Sewage Disposal Plant
was operated under the supervision of

Mr. W. Watmough, Superintendent. The

quantity of sewage treated this year increased by 408.93
million imperial gallons or 3.9% over the year 1959 and the
total plant removals for the year dropped 27.4% below the
previous year. Owing to the comparatively dry year, the sand
and grit removal dropped 39.2% below 1959. Grease and oil
removal was down 65.6% from 1959 but is still a nuisance and
amounts to 14.2% of the total plant removals this year.

This plant was operated at a cost of \$46,935.00 or \$4.30 per
million imperial gallons treated. This is a decrease of
\$.01 per million gallons of sewage treated over 1959.

Public
Utilities

- Early in 1960, it became apparent that
the work of the different utilities in

the Corporation of the City of Hamilton would have to be co-
ordinated and better planned in order to obtain the necessary
control of the work done on City streets. On July 26, 1960
the Committee on Works and City Council approved the formation
of the Utilities Co-ordinating Committee of Hamilton. This
organization is comprised of a policy committee and a working
committee.

The members of the policy committee are,

City Engineer and Manager of Water Works, the outside plant engineer of the Bell Telephone Company, the supervisor of distribution for United Gas Limited, and the Chief Engineer of the Hamilton Hydro Electric System.

The members of the working committee are, the Sewer Engineer, Roadway Engineer, and Water Works Engineer of the City of Hamilton, the three supervising engineers of the Bell Telephone Company, the supervisor of underground plant and the supervisor of aerial construction for the Hamilton Hydro Electric System, and two members of United Gas Ltd.

The object of the Utilities Co-ordinating Committee is to co-ordinate the activities of all utilities in the City of Hamilton with plant constructed on city road allowances, so that their work will be carried out in a planned manner, to the interest of all concerned. One of the tasks of the committee is to prepare a barricading manual establishing standard procedures for informing, protecting and guiding the general public through and around works in progress on road allowances.

Respectfully submitted,

W. L. PHILLIPS

Sewer Engineer.

SUMMARY OF SEWERS CONSTRUCTED IN 1960

Total length of Sanitary Sewers	-	2.32 miles
Total length of Storm Sewers	-	2.19 miles
Total length of Combined Sewers	-	1.20 miles
		—
Total length of Sewers		5.71 miles

GRAND SUMMARY

Total length of Sanitary Sewer as of Dec.31/59	-	26.71 miles	
Length of Sanitary Sewers Laid in 1960	-	2.32 miles	
Total length of Sanitary Sewers as of Dec.31/60	—		29.03 miles
Total length of Storm Sewers as of Dec.31/59	-	28.05 miles	
Length of Storm Sewers Laid in 1960	-	2.19 miles	
Total length of Storm Sewers as of Dec.31/60	—		30.24 miles
Total length of Combined Sewers as of Dec.31/59	-	402.59 miles	
Length of Combined Sewers laid in 1960	-	1.20 miles	
Total length of Combined Sewers as of Dec.31/60	—		403.79 miles
Total Length of Sewers as of Dec.31/60			463.06 miles
			=====

SEWERS CONSTRUCTED BY CONTRACT 1960

AUTHORITY - LOCAL IMPROVEMENT ACT OR MUNICIPAL ACT

Street	From	To	Length	Dia.	Type	Kind	Av. Depth	M.H.	Cost	Contractor	Ground	Plan No.
Adelaide St.	Macklin St.	235' Westerly	235'	12"	Comb.	Vit.	11'	1	2,161.10	Gavin Const.	Clay	A-198
Briarwood Cres.	Elmwood Ave.	Bendamere Ave.	550'	12"	Storm	Vit.	13'	5	136,088.05	Cameron & Sim	Clay & Rock	B-367
Briarwood Cres. (W.L.)	San. Road	Elmwood Ave.	566'	15"	San.	Vit.						
			639'	15"	San.	Vit.	20'	6	see above	Cameron & Sim	Clay & Rock	B-368
			601.25'	72"	Storm	Reinf. Conc.						
Brodick St. Private Drains Only	Iona Ave.	South end		6"		Vit.			-----	Delmar Cont.	Clay	B-340
Brucedale Ave.	High St.	95' Westerly	95'	12"	Comb.	Vit.	13'-6"	2	Incl. with watermain	Robinson Cont.	Clay & Rock	B-366
Elmwood Ave.	West 18th St.	Briarwood Cres.	315.75'	72"	Storm	Reinf. Conc.	20'	0	see above	Cameron & Sim	Clay & Rock	B-368
Future St.	Mohawk Rd. approx. 150' E. of West 15th St.	1500' Southerly	1568'	10"	San.	Vit.	17'	13	see above	Cameron & Sim	Clay & Rock	W-345
			1176'	30"	Storm	Reinf. Conc.						
			307'	72"	Storm	"						
Glennie Ave.	216' N. of Britannia Ave. Ridge St.	113' Southerly	113'	9"	Comb.	Vit.	9'	1	691.22	Groves Ltd.	Clay & Shale	G-226
Hess St. and on Hester St.	700' East of Ridge St.	700' Easterly	176'	15"	San.	Vit. Conc.	17'	15	106,487.73	Baldasaro & MacGregor	Clay & Rock	H-162
		Upper Wellington St.	304'	18"	San.	Reinf. Conc.						
			1229'	54"	Storm	"						
			558'	60"	Storm	"						
			214'	66"	Storm	"						
Holmes Ave.	418' W. of Leland Ave. Concession St.	140' Westerly	140'	12"	Comb.	Vit.	10'	1	1,855.21	Hamilton Excavating	Clay	H-113
Jolley Cut Park		210' Northerly	195'	12"	Comb.	Vit.	11'	1	3,975.43	Robinson Cont.	Clay & Rock	J-50
Lower Horning Rd.	Purvis Dr.	Harold St.	210'	12"	Comb.	Vit.	9.5'	1	249.50	Delmar Cont.	Clay & Rock	I-96
Mohawk Road	East 43rd St.	Unnamed Road Allow- ance 130' W. of East 43rd St.	282'	24"	Comb.	Reinf. Conc.	12.5'	8	-----	Greenhill Excavating	Clay	G-227
			316'	27"	Comb.	"						
			492'	30"	Comb.	"						
& on Unnamed Road Allowance	Mohawk Road	920' Southerly							20,000.00			

SEWERS CONSTRUCTED BY CONTRACT 1960 Cont'd.

Street	From	To	Length	Dia.	Type	Kind	Av. Depth	M.H.	Cost	Contractor	Ground	Plan No.
Mohawk Road	215' W. of West 15th St.	1500' E. of West 15th St.	1176' 689' 419' 468' 412' 529' 126' 400' 400' 42' 1362' 1037' 345'	10" 12" 12" 24" 27" 48" 72" 10" 12" 10" 18" 72" 6'0"x6'6"	San. San. Storm Storm Storm Storm Storm San. Storm San. San. Storm Storm	Vit. Vit. Vit. Reinf. Conc. " " " " Vit. Vit. Vit. Conc. Reinf. Conc. Mono. Conc.	14'	15	85,069.95	Cameron & Sim	Clay & Rock	M-318
Mohawk Road	300' W. of West 30th St.	700' W. of West 30th St.	400'	10"	San.	Vit.	11'	4	8,489.50	Hamilton Excavating	Clay & Rock	M-310
Ridge St. Extension	Mohawk Rd. Hess St.	Hess St.	42' 1362' 1037' 345'	10" 18" 72" 6'0"x6'6"	San. San. Storm Storm	Vit. Conc. Reinf. Conc.	18'	6	100,262.96	Baldasaro & Macgregor	Clay & Rock	R-138
Robert Street	West Ave.	Emerald St.	715'	12"	Comb.	Vit.	9'	3	13,208.26	M.H. & B.	Clay	R-137
Sanatorium Rd.	Briarwood Cres.	West 15th St.	314' 290'	15" 72"	San. Storm	Vit. Reinf.	16'	3	14,057.35	Cameron & Sim	Clay & Rock	S-311
Scenic Drive	180' E. of Colquhoun Cr.	190' Easterly	180'	12"	Storm	Vit.	135'	2	Inc. in Rdwy.	Delmar Cont.	Clay & Rock	S-353
Strathearne Ave.	Beach Road	2410' Northerly	2445'	24"	San.	Reinf.	21'	7	66,031.97	Robinson Cont.	Clay	S-342
West 2nd St.	200' S. of Mohawk Rd.	425' S. of Mohawk Rd.	223' 225'	10" 12"	San. Storm	Vit.	11'	2	827.34	Delmar Cont.	Clay	S-349
West 3rd St.	195' S. of Mohawk Rd.	285' S'y	285'	10"	San.	Vit.	11'	2	3,212.33	Gavin Const.	Clay	W-339
West 5th St.	348' S. of Brautdale Ave.	Fennel Ave.	240' 320' 440' 299' 719'	12" 12" 15" 15" 72"	Storm Comb. San. San. Storm	Vit. Vt. Vt. Vt. Reinf.	12'	2	10,265.14	Groves Ltd.	Clay	W-348
West 15th St.	San. Rd.	Mohawk Rd.					18'	4	42,360.16	Cameron & Sim	Clay & Rock	W-344

TOTAL COST \$615,293.20

Bowman St.

SEWERS CONSTRUCTED BY CONTRACT 1960 Cont'd.

TOTAL LENGTH OF SANITARY SEWER	10,928'	-	2.07 Miles
TOTAL LENGTH OF STORM SEWER	10,206'	-	1.93 Miles
TOTAL LENGTH OF COMBINED SEWER	3,533'	-	.67 Miles
	_____		_____
TOTAL LENGTH OF SEWER	24,667'		4.67 Miles
	_____		_____

<u>SEWAGE PUMPING STATIONS</u>			
<u>STATION</u>	<u>TOTAL PUMPAGE</u>	<u>AVERAGE DAILY PUMPAGE</u>	<u>OPERATING COST FOR 1960</u>
GAGE AVENUE	10,903,220,000	29,790,218	\$ 73,992.00
PARKDALE AVENUE			25,813.00
VALLEY STREET	914,560,000	2,498,797	20,617.00
STRACHAN STREET	446,938,000	1,122,142	9,272.00
ROYAL AVENUE			4,236.00
WEST 31ST STREET			3,170.00

REPORT OF THE ROADWAY ENGINEER

This year's roadway and sidewalk construction and reconstruction programme was indeed an extensive one for the Roadway Section.

This year saw the start of the first phase of a reconstruction programme for roads and sidewalks amounting to \$2,500,000.00, which coupled with Local Improvement and Subdivision Projects amounting to \$1,500,000.00 approximately doubled the normal annual programme experienced in previous years. (See appended list)

This new construction and reconstruction programme was carried out under the direct supervision of the Assistant Roadway Engineer (Construction). A number of third year engineering students from the various Universities were hired temporarily for the summer months to assist in the inspection of the work along with the regular inspectors who were supervised by two senior inspectors. Seven field parties were used in completing the necessary line and grade field work.

The preparation of plans and specifications for the undertaking of this programme was under the direct supervision of the Assistant Roadway Engineer (Design) and in order to cope with the increased load on the draught-

ing staff, temporary additional staff consisting of third year engineering University students was hired for the summer months.

Time schedules were prepared for the undertaking of the works programme in order to provide for an orderly flow of the work with a minimum of inconvenience to the general public.

Quality control of concrete and asphalt used in this construction programme was supervised by independent inspection companies. These companies were responsible for the inspection of concrete and asphalt materials at the various contractors' and suppliers' batching plants. Donald Inspection Company was responsible for concrete work and Warnock Hersey Company for the asphalt work.

Contract Works - Roads (See appended list)

The total mileage of roads constructed in 1960 amounted to thirty-one point nine eight miles with a total construction cost of \$3,079,070.41. This total consisted of seven contracts for Local Improvement Roads, Asphalt on Concrete and Asphalt on Macadam, eight contracts for Reconstruction, three contracts for construction of roads under Subdivision Agreements and one contract for the hot-mix asphalt resurfacing of roads in Roxborough Park Survey.

The Local Improvement Roads were constructed in various sections of the City with the emphasis on the Mountain area. Asphalt on Macadam roads were completed in the Mohawk Park Survey.

The Reconstruction Programme involving thirteen point five miles of arterial streets brought about a reduction in the number of City streets on which Hamilton Street Railway tracks existed. The following streets had the rails covered over with asphalt:

- (1) Barton Street - Sherman Avenue to James Street
- (2) King Street - Sherman Avenue to Sanford Avenue
- (3) Main Street - Sherman Avenue to Ottawa Street.

The only streets now remaining in Hamilton with H.S.R. tracks are Sherman Avenue, from King Street to Main Street, Gore Street, from Hughson Street to Catharine Street, and Barton Street, from Ferguson Avenue to Wellington Street.

Contract Work - Sidewalks (See appended list)

The total mileage of sidewalks and curbs constructed in 1960 amounted to thirty-three point seven five miles at a total cost of \$909,033.43.

A Sidewalk Reconstruction Programme

was commenced this year with the calling of two contracts amounting to \$331,754.35. This work commenced in September, 1960 and the contracts were only partially completed by the close of the construction season. In addition, thirteen miles of sidewalks were reconstructed as part of the Roadway Reconstruction Programme, at a total cost of \$432,000.00.

Five point eight three miles of sidewalks were constructed this year in Buchanan Park Survey by Hager-ville Asphalt Paving Limited for the sum of \$168,525.59. Six per cent of the total contract was not completed and this work will be carried over for construction in the Spring of 1961. Sidewalk construction in this Survey was one stage in the installation of services under a Land Development Agreement between the City of Hamilton and the Provincial and Federal Governments.

Four point nine one miles of sidewalks were also constructed this year in Mohawk Park Survey, costing \$110,421.41, where formerly only curbs existed. The contractor was Curran and Briggs of Toronto. Ten foot boulevards were provided throughout the Survey.

Four point five two miles of Local Improvement sidewalk contracts, totalling \$88,922.13 were

prepared and work constructed in 1960.

Six sidewalk contracts were prepared under Subdivision Agreement amounting to one point one six miles at a cost of \$26,701.26. These contracts were drawn up with the Department of Engineering acting in the capacity of engineering consultant to the Subdivider.

Specific Projects - Contracts were also prepared for numerous other smaller works totalling approximately \$77,000.00, the most important of which are as follows:

- | | |
|---|-------------|
| (a) Improving radius at south-east corner of Sherman Avenue and Crockett Street | \$ 500.00 |
| (b) Closing Glenholme Avenue at Lawrence Road | \$ 1,649.00 |
| (c) Hot-mix asphalt sidewalk repairs on Beach Boulevard | \$ 2,475.00 |
| (d) Improvements to bridge approaches, Mary, John and Catharine Streets | \$ 2,705.00 |
| (e) Painting of Mountain Park Avenue bridge | \$ 700.00 |
| (f) Retaining wall - St. Joseph's Drive, 1600' east of Sherman Cut | \$ 3,225.00 |
| (g) Repairs to bridge at Buttermilk Falls | \$ 6,862.00 |
| (h) Construction of retaining wall - Flock Road | \$19,687.00 |

(i) Hot-mix asphalt paving of
boulevards \$ 9,000.00

Aerial Plant on Road Allowance - The Roadways Section is responsible for checking the location of poles, anchors and aerial cable on the City road allowance with respect to requests from Bell Telephone Company, Hamilton Hydro-Electric System, Hamilton Street Railway and Traffic Department.

In 1960 there were seventy applications involving the location of four hundred and sixty-four poles and one hundred and thirty-nine anchors received and processed. This included applications from the Traffic Department for the signalization of twelve intersections.

Commercial Licenses -

During the year 1960, some fifty-five license applications for proposed garages, parking lots and service stations were investigated on the site to ascertain requirements necessary to comply with the Streets By-law. The Roadway Section was concerned with the drainage layout of the lot to ensure that catch basins would be installed to prevent surface and wash water from draining across the sidewalk from paved lots. Where an applicant intended to pave the boulevard adjacent to his lot, indemnity agreements

for paving portion of the highway were processed before permits were issued to work on City property.

Arrangements were made in co-operation with the Traffic Department to locate approaches to the best advantage to the owner and cause the least hindrance to traffic.

Estimates were given to remove or replace obsolete approaches and to reinforce sidewalks where required. The Streets and Sanitation Department did the necessary concrete work in these instances following direction from the Roadway Section.

Street Lighting - The street lighting programme in 1960 was stepped up with the addition of Mercury Vapour Luminaire fixtures making their appearance on City streets such as Upper Gage Avenue, south of Mohawk Road and Burlington Street, east of Kenilworth Avenue.

House Numbers - The Roadway Section prepared house numbering plans throughout 1960 for use by the Streets and Sanitation Department in numbering homes on new streets as well as renumbering of homes on renamed streets.

Pothole Committee - Due to the adverse criticism received

with respect to the matter of repairing potholes, Board of Control saw fit to appoint a Committee consisting of elected representatives and appointed officials to investigate and study ways and means of making more satisfactory repairs to potholes developing in the roadways during the freeze-thaw cycles of the winter months and the early spring break-up.

As directed by the Committee, weekly tours were made by the Roadway Engineer and Street Commissioner to assess and co-ordinate working operations and schedules of the maintenance forces throughout the City.

Respectfully submitted,

J. H. BISHOP

Roadway Engineer.

SUMMARY OF ROADS CONSTRUCTED IN 1960

	<u>No. of Miles</u>	<u>Total Cost</u>
Reconstruction	13.50	\$ 1,755,547.66
Asphalt on Concrete	9.80	\$ 927,887.22
Asphalt on Macadam	5.44	\$ 304,801.46
Roxborough Park Roads	3.02	\$ 55,098.66
Subdivision Agreement Roads	0.62	\$ 35,735.41
	<hr/>	<hr/>
Grand Totals	<u>31.98 miles</u>	<u>\$ 3,079,070.41</u>

ROADWAY RECONSTRUCTION AND RESURFACING 1960

<u>Street</u>	<u>From</u>	<u>To</u>	<u>Width</u>	<u>Length in ft.</u>	<u>Contractor</u>	<u>Total Cost</u>
Avalon Place	Burr's Street	Artimur Avenue	24	412	Curran & Briggs	6,966.83
Barton Street	Sherman Avenue	James Street	50	7615	Curran & Briggs	187,513.77
Bay Street	Barton Street	Stuart Street	30	678	Curran & Briggs	13,034.32
Beach Road	Hunter Street	York Street	30	1877.5	Griffith & Crane	50,949.94
Burlington Street	Gage Avenue	Lottridge Street	30	1310	A. Cope & Sons	42,020.77
	Sherman Avenue	Wilcox Street	40	1267.5	A. Cope & Sons	63,071.15
Cannon Street	Bay Street	MacNab Street	40	888	Griffith & Crane	19,504.90
Cathcart Street	Cannon Street	Wilson Street	30	712	Curran & Briggs	16,288.54
Cumberland Avenue	Wentworth Street	Sanford Avenue	24	660	Curran & Briggs	11,797.43
Dundurn Street	Hill Street	Hillcrest Avenue	40	3271	Hagersville Construction	137,297.83
Gore Street	Hughson Street	James Street	38.2	332	Griffith & Crane	18,834.03
Jackson Street	John Street	Charles Street	(27.5) (29.5)	1282.4	Griffith & Crane	29,475.51
James Street	King Street	St. Joseph's Drive	48	3145	Standard Paving	134,787.80
James Street Hill	St. James Place	Gateview Drive	22	2616	Standard Paving	16,110.83
John Street	Gore Street	Cannon Street	29	525	Curran & Briggs	10,406.45
Justine Avenue	Rossllyn Avenue	King Street	30 to 24	2153	A. Cope & Sons	56,281.74
King Street East	Sanford Avenue	Sherman Avenue	39.7	2071.1	Curran & Briggs	45,446.93
Longwood Road	Aberdeen Avenue	Main Street	44	2055	Hagersville Construction	65,561.23
Longwood Road	Main Street	King Street	40	1402	Hagersville Construction	52,601.80
Longwood Road	King Street	Franklin Road	Varies	2402	Hagersville Construction	80,944.01
MacNab Street	York Street	Merrick Street	41.5	311.5	Griffith & Crane	11,180.60
Merrick Street	James Street	MacNab Street			Griffith & Crane	3,834.07
Main Street	Sherman Avenue	Ottawa Street	42	5212.5	A. Cope & Sons	155,499.33
Main Street	Bay Street	MacNab Street	50	875	A. Cope & Sons	

<u>Street</u>	<u>From</u>	<u>To</u>	<u>Width</u>	<u>Length in ft.</u>	<u>Contractor</u>	<u>Total Cost</u>
Ottawa Street	Main Street	C. N. R. Tracks	40	4595	A. Cope & Sons	209,356.73
Park Street	King Street	Main Street	27	493	Griffith & Crane	10,725.17
Park Street	York Street	Market Street	40	254	Griffith & Crane	8,632.66
Queen Street	Barton Street	King Street	30	2612	Hagersville Construction	79,464.75
Queen Street	Amelia Street	Garth Street	22	3281	Standard Paving	14,653.57
Rosslyn Avenue	Justine Avenue	Lawrence Road	24	280	A. Cope & Sons	6,633.52
Rosslyn Avenue	Justine Avenue	Montclair Avenue	24	871.5	A. Cope & Sons	16,861.21
Robert Street	West Avenue	Victoria Avenue	28	327	A. Cope & Sons	10,962.76
Stuart Street	MacNab Street	Caroline Street	40	1394.3	Curran & Briggs	44,418.60
St. Joseph's Drive	John Street	Flock Road	22	10978	Standard Paving	60,000.36
Walnut Street	King Street	Main Street	26.9	285	Curran & Briggs	5,107.78
Wentworth Street	King Street	Barton Street	30	2602	Curran & Briggs	54,400.96
West Avenue	King Street	Main Street	27	275.5	Curran & Briggs	4,919.78
				<u>71322</u>		
Totals						\$ 1,755,547.66

ASPHALT ON CONCRETE ROADS 1960

<u>Street</u>	<u>From</u>	<u>To</u>	<u>Width</u> <u>in ft.</u>	<u>Length</u> <u>in ft.</u>	<u>Topping in</u> <u>sq. yds.</u>	<u>Brick Gut-</u> <u>ter sq.yds.</u>	<u>Contractor</u>	<u>Total Cost</u>
Adeline Avenue	Main Street	Roxborough Avenue	20 to 24	1214	3091	202	A. Cope & Sons	16,282.84
Alderney Avenue	Callie Road	East 16th Street	28	796	2597	122	Brennan Paving	10,991.03
Berry Street	Main Street	Central Avenue	24	1107	2971	182	A. Cope & Sons	13,856.13
Brunswick Avenue	Barton Street	Superior Street	24	542	1446	91	A. Cope & Sons	7,764.08
Brucedale Avenue	East 22nd Street	Upper Sherman Avenue	40	2149	10669.5	333	Hagersville Paving	54,670.64
Brucedale Avenue	East 34th Street	Upper Gage Avenue	40	1551	7810	242	Hagersville Paving	39,347.40
Beland Avenue	Queenston Road	Main Street	24	690	1851.5	116	A. Cope & Sons	10,221.85
Chapple Street	Lloyd Street	North end of Street	40	122	--	--	A. Cope & Sons	5,028.30
Cochrane Road	King Street	Queenston Road	30	1949	6564	312	Griffith & Crane	32,027.90
Dunn Avenue	Burlington Street	Beach Road	28	2580	7859.7	403.6	Griffith & Crane	38,516.72
Denlow Avenue	Garth Street	Scenic Drive	40	677.5	3046	107	A. Cope & Sons	19,565.80
East 14th Street	Fennell Avenue	Howe Avenue	28	1052	3613	161	Hagersville Paving	17,591.31
East 14th Street	Howe Avenue	Callie Road	28	643	1943	104	Brennan Paving	7,994.31
East 16th Street	Bromley Road	Vickers Road	28	1502	5806	244	Brennan Paving	21,030.20
East 25th Street	Fennell Avenue	Franklin Road	28	1636	5295	274	Brennan Paving	22,669.40
East 36th Street	Eleventh Avenue	Mohawk Road	28	1094	3460	175	Brennan Paving	14,777.57
East 44th Street	Fennell Avenue	Mohawk Road	28	3311	10508	540	Brennan Paving	43,804.48
Glassco Avenue	Main Street	Dunsmure Road	24	577	1492.3	97	A. Cope & Sons	7,196.95
Glow Avenue	Parkdale Avenue	Woodward Avenue	30	2627	9003	414	Griffith & Crane	48,467.55
Hunter Street	Park Street	Bay Street	30	571	2087.9	88.6	Griffith & Crane	15,360.69
Inverness Avenue	Wellington Street	East 13th Street	30	868.5	3053	136	A. Cope & Sons	16,889.11
Julian Avenue	Roxborough Avenue	Britannia Avenue	30	777	2500	130	A. Cope & Sons	10,856.73

ASPHALT ON MACADAM ROADS 1960

<u>Street</u>	<u>From</u>	<u>To</u>	<u>Width</u>	<u>Length in ft.</u>	<u>Contractor</u>	<u>Total Cost</u>
Bowman Street	Main Street	T. H. & B. Railway	30	1315	A. Cope & Sons	17,307.87
Bettina Avenue	Hixon Road	North end of street	24	700	A. Cope & Sons	6,522.18
Cherry Road	Pottruff Road	West end of street	28	335	A. Cope & Sons	4,182.89
Cochrane Road	Dunsmure Road	Roxborough Avenue	24	632	A. Cope & Sons	5,449.26
Crosthwaite Avenue	Normandy Road	Monterey Avenue	26	499	A. Cope & Sons	4,924.39
Callie Road	David Avenue	Alderney Avenue	28	797	A. Cope & Sons	8,603.11
Duncombe Drive	East 14th Street	East 16th Street	28	579	A. Cope & Sons	5,817.15
East 5th Street	Queensdale Avenue	Inverness Avenue	28	698	A. Cope & Sons	6,991.57
East 6th Street	Queensdale Avenue	Inverness Avenue	28	702	A. Cope & Sons	7,078.44
East 7th Street	Queensdale Avenue	Inverness Avenue	28.2	704	A. Cope & Sons	7,052.33
East 8th Street	Inverness Avenue	Approx. 400' south of Inverness Avenue	28	400	A. Cope & Sons	4,140.82
East 8th Street	Queensdale Avenue	Approx. 400' south of Inverness Avenue	28	314	A. Cope & Sons	2,914.42
East 9th Street	North end of Eliz. Heights Lot #1	South end of Eliz. Heights Lot #25	28	304	A. Cope & Sons	2,965.46
East 13th Street	Inchlee Avenue	Howe Avenue	28	400	A. Cope & Sons	4,171.25
East 19th Street	Queensdale Avenue	Brucedale Avenue	24	748	A. Cope & Sons	6,388.41
East 21st Street	N. limit of Lot #54	N. limit of Lot #50	28	200	A. Cope & Sons	1,998.29
East 22nd Street	N. limit of Lot #200	N. limit of Lot #204	28	169	A. Cope & Sons	1,659.74
East 22nd Street	Fennell Avenue	Approx. 270' south of MacLennan Avenue	28	993	A. Cope & Sons	11,399.45
East 23rd Street	Brucedale Avenue	Fennell Avenue	30	695	A. Cope & Sons	7,514.99
East 23rd Street	Crockett Street	Queensdale Avenue	30	872	A. Cope & Sons	10,382.80
East 23rd Street	N. limit of Lot #233	N. limit of Lot #237	30	200	A. Cope & Sons	2,357.37
East 24th Street	N. limit of Lot #265	N. limit of Lot #269	29	201	A. Cope & Sons	1,943.11
East 25th Street	Mohawk Road	Burkholder Drive	28	1189	A. Cope & Sons	13,360.86
East 25th Street	Brucedale Avenue	Queensdale Avenue	24.3	725	A. Cope & Sons	8,589.07
East 26th Street	Concession Street	Crockett Street	24	819	A. Cope & Sons	7,264.78
East 38th Street	Concession Street	Crockett Street	28	700	A. Cope & Sons	6,996.60
Elliott Avenue	Toby Crescent	Kenilworth Avenue	28	1246	A. Cope & Sons	13,320.67

<u>Street</u>	<u>From</u>	<u>To</u>	<u>Width</u>	<u>Length in ft.</u>	<u>Contractor</u>	<u>Total Cost</u>
Elva Court	King's Forest Drive	West end of street	28	144	A. Cope & Sons	1,940.94
Enfield Avenue	Brentwood Drive	Dellwood Drive	28.1	958	A. Cope & Sons	9,943.55
Ewen Road	Iona Avenue	South end of street	28	617	A. Cope & Sons	7,610.44
Franklin Road	Sherman Avenue	265' W. of East 25th St.	28	1030	A. Cope & Sons	14,463.32
Franklin Road	East 24th Street	East end of Mohawk Park Survey	28	319.5	A. Cope & Sons	2,950.00
Gildea Street	East 25th Street	East end of Mohawk Park Survey	28	185	A. Cope & Sons	1,927.90
Halam Avenue	East 25th Street	East end of Mohawk Park Survey	24	219	A. Cope & Sons	2,167.93
Halam Avenue	East 25th Street	East 27th Street	28	513	A. Cope & Sons	5,797.65
Halam Avenue	East 24th Street	East end of Mohawk Park Survey	24	200	A. Cope & Sons	2,150.00
Leland Street	Whitney Avenue	South end of street	28	552	A. Cope & Sons	4,833.51
MacLennan Avenue	East 23rd Street	Shadyside Avenue	28	779	A. Cope & Sons	8,339.62
Melville Street	Queensdale Avenue	Inverness Avenue	28	705	A. Cope & Sons	7,075.24
Seeley Avenue	East 25th Street	East end of Mohawk Park Survey	28	299	A. Cope & Sons	3,009.20
Shirley Street	Fennell Avenue	Hardale Crescent	28	290	A. Cope & Sons	2,609.53
South Drive	Rosedale Avenue	300' W. of Ferndale	24	805	A. Cope & Sons	7,077.10
Tenth Avenue	Upper Ottawa Street	Winchester Boulevard	28	447	A. Cope & Sons	4,706.60
Tragina Avenue	Vansitmart Avenue	C. N. R. Tracks	24	612	A. Cope & Sons	5,178.93
Westminister Avenue	Denlow Avenue	Mountain Crest Avenue	28	1077	A. Cope & Sons	10,987.08
Wildewood Avenue	Brentwood Drive	Kingslea Drive	28	990	A. Cope & Sons	10,797.57
Winston Avenue	Westwood Avenue	Baxter Street	28	889	A. Cope & Sons	9,938.07
Totals				28767		\$304,801.46

ROXBOROUGH PARK ROADS 1960
Surface Restoration

<u>Street</u>	<u>From</u>	<u>To</u>	<u>Width</u>	<u>Length in ft.</u>	<u>Contractor</u>	<u>Total Cost</u>
Admiral Place	MacLaren Avenue	East end of street	24	81	Curran & Briggs	429.22
Airdrie Avenue	Barton Street	Britannia Avenue	24	634	Curran & Briggs	1,788.21
Armstrong Place	Main Street	Glengrove Avenue	24	1537	Curran & Briggs	6,584.01
Bernard Street	Barton Street	Martha Street	24	1032	Curran & Briggs	2,856.76
Bingham Road	Glengrove Avenue	Main Street	24	1130	Curran & Briggs	3,246.73
Blair Avenue	Barton Street	Martha Street	24	1024	Curran & Briggs	2,922.46
Britannia Avenue	Oriole Crescent	Adair Avenue	24	1710	Curran & Briggs	6,985.14
Eastvale Place	Armstrong Place	Armstrong Place	24	976	Curran & Briggs	3,032.97
East wood Street	Barton Street	Heath Street	24	803	Curran & Briggs	2,246.24
Eaton Place	Bingham Road	Bingham Road	24	1086	Curran & Briggs	3,097.23
Glengrove Avenue	Reid Avenue	Armstrong Place	24	1003	Curran & Briggs	3,999.68
Grimsby Avenue	Martha Street	MacLaren Avenue	24	505	Curran & Briggs	1,735.32
Heath Street	Sumach Street	Eastwood Avenue	24	250	Curran & Briggs	697.70
Lewis Street	Britannia Avenue	Martha Street	24	485	Curran & Briggs	1,985.94
MacLaren Avenue	Barton Street	Grimsby Avenue	24	692	Curran & Briggs	2,078.22
Main Street	Bingham Road	Armstrong Place	24	547	Curran & Briggs	2,259.95
Martha Street	Lewis Street	Oriole Crescent	24	1393	Curran & Briggs	5,689.12
Oriole Crescent	Britannia Avenue	Martha Street	24	324	Curran & Briggs	1,297.71
Sumach Street	Barton Street	Heath Street	24	770	Curran & Briggs	2,166.05
<u>Totals</u>				<u>15982</u>		<u>\$55,098.66</u>

SUBDIVISIONS

ASPHALT ON MACADAM ROADS 1960

<u>Street</u>	<u>From</u>	<u>To</u>	<u>Width</u>	<u>Length in ft.</u>	<u>Contractor</u>	<u>Total Cost</u>
<u>CAMDEN COURT SURVEY</u>						
Camden Street	Mohawk Road	Cameo Avenue	28	235	A. Cope & Sons	2,720.50
Cameo Avenue	N. limit of Subdivision	W. limit of Subdivision	28	1150	A. Cope & Sons	11,311.50
Carmen Avenue	Cameo Avenue	W. limit of Subdivision	28	610	A. Cope & Sons	4,052.50
<u>RUSSELL PARK SURVEY</u>						
East 19th Street	Vickers Road	N. limit of Russell Park Survey	28	560	Griffith & Crane	5,660.21
<u>MARTIN PARK ADDITION SURVEY</u>						
Carleton Avenue	Clarendon Avenue	S. end of Martin Park Addition	28	737	A. Cope & Sons	11,990.70
<u>Totals</u>				<u>3292</u>		<u>\$35,735.41</u>

SUMMARY OF SIDEWALKS AND CURBS CONSTRUCTED IN 1960

<u>Reconstruction Sidewalks</u>		<u>Mohawk Park Sidewalks</u>	
C.W.&C.	9.72 miles	C.W.&C.	0.18 miles
C.W.&I.C.	1.09 "	C.W.&I.C.	0.38 "
Curb Only	4.58 "	Walk Only	4.35 "
Monolithic Curb	1.92 "		
Repairs	19887.8 sq. yds.	Total	4.91 miles
Total	17.31 miles		\$110,421.41
<u>Local Improvement Sidewalks</u>		<u>Subdivision Sidewalks</u>	
C.W.&C.	2.23 miles	C.W.&C.	1.04 miles
C.W.&I.C.	0.42 "	C.W.&I.C.	0.12 "
Walk Only	0.17 "	Total	1.16 miles
Curb Only	1.70 "		
Total	4.52 miles		\$ 22,520.81
			4,180.45
			\$ 26,701.26
<u>Buchanan Park Sidewalks</u>		<u>Grand Totals</u>	
C.W.&C.	5.74 miles	Repairs	19,887.8 sq. yds.
Walk Only	0.09 "	Monolithic Curb	1.92 miles
		C.W.&C.	18.91 "
		C.W.&I.C.	2.01 "
		Curb Only	8.21 "
		Walk Only	4.62 "
Total	5.83 miles	Total	33.75 miles
			\$909,033.43
			\$ 26,326.99
			56,000.00
			484,570.63
			81,215.79
			148,926.62
			111,993.40

SIDEWALKS RECONSTRUCTED IN 1960

<u>Street</u>	<u>From</u>	<u>To</u>	<u>Length of C.W.&C. in ft.</u>	<u>Length of Monolithic curb in ft.</u>	<u>Length of Curb Only in ft.</u>	<u>Repairs in sq. ft.</u>	<u>Total Cost</u>	<u>Contractor</u>
Avalon Place	Burris Street	Arthur Avenue	--	250.6	--	177.96	1,960.32	Curran & Briggs
Bay Street	Hunter Street	York Street	1263.5	2153.5	567.8	2315	42,959.20	Griffith & Crane
Bay Street	Barton Street	Stuart Street	1293.7	--	--	--	7,041.34	Curran & Briggs
Barton Street	Sherman Avenue	James Street	--	2415	151.6	1541.3	17,534.00	Curran & Briggs
Beach Road	Gage Avenue	Lottridge Avenue	2527.5	--	--	--	10,587.47	A. Cope & Sons
Burlington Street	Sherman Avenue	Wilcox Street	1215	--	84	--	5,133.00	A. Cope & Sons
Cannon Street	Bay Street	MacNab Street	--	--	83.5	55.78	627.10	Griffith & Crane
Cathcart Street	Cannon Street	Wilson Street	825.4	183.6	--	85.1	5,750.37	Curran & Briggs
Dundurn Street	Hill Street	Aberdeen Avenue	2838.5	1601.5	--	1166	25,815.48	Hagersville
Dundurn Street	Hillcrest Avenue	Aberdeen Avenue	3168	--	--	--	12,830.39	H. F. Olds
East 17th Street	Inverness Avenue	Concession Street	2351	--	--	--	11,476.84	H. F. Olds
Fairholt Avenue	King Street	North end of st.	746	--	--	--	2,016.45	Baldasaro & MacGregor
Closing of Glen-Holme Cul-De-Sac	--	--	--	--	467	--	1,167.50	Griffith & Crane
Gore Street	Hughson Street	James Street	697.5	--	--	--	7,626.08	Griffith & Crane
Hunter Street	Bay Street	Park Street	--	32.5	305	315	3,689.48	Griffith & Crane
Inverness Avenue	East 16th Street	East 18th Street	498	--	--	--	3,004.29	H. F. Olds
Jackson Street	John Street	Charles Street	2162.1	--	45	--	10,021.67	Griffith & Crane
James Street	King Street	St. Joseph's Dr.	864.3	--	2975.7	3318	11,327.57	Standard Paving
James Street Hill	St. James Place	Gateview Drive	---	--	375.5	38.52	1,079.10	Standard Paving
John Street	Gore Street	Cannon Street	1000	--	--	--	7,170.68	Curran & Briggs
Justine Avenue	Rosslyn Avenue	King Street	1697	--	2079	985	17,505.43	A. Cope & Sons

Street	From	To	Length of C.W.&C. in ft.	Length of Monolithic curb in ft.	Length of Curb Only in ft.	Repairs in sq. ft.	Total Cost	Contractor
King Street East	Sanford Avenue	Sherman Avenue	--	650.9	1487.2	487	8,834.29	Curran & Briggs
Longwood Road	Main Street	King Street	76	--	2630	242	11,485.30	Hagersville
Longwood Road	Main Street	Aberdeen Avenue	1662	--	2068	---	10,847.25	Hagersville
Longwood Road	King Street	Franklin Road	4569	--	11.5	---	20,491.10	Hagersville
Main Street	Bay Street	MacNab Street	1741.5	--	--	2365	22,000.91	Griffith & Crane
Main Street	Sherman Avenue	Ottawa Street	--	1831.5	4775	1499.5	21,894.07	A. Cope & Sons
MacNab Street	York Street	Merrick Street	292.9	--	--	---	6,577.35	Griffith & Crane
Melvin Avenue	Normanhurst Avenue	Walter Avenue	532	--	--	---	3,071.65	Baldasaro & MacGregor
Myrtle Avenue	Main Street	Delaware Avenue	1407	--	--	---	6,898.60	Baldasaro & MacGregor
Ottawa Street	Main Street	C.N.R. Tracks	2684	--	4255.5	4058	51,896.52	A. Cope & Sons
Park Street	King Street	Main Street	913	--	20.2	21.5	5,286.27	Griffith & Crane
Park Street	York Street	Market Street	463	--	--	---	5,518.35	Griffith & Crane
Picton Street	Mary Street	339' Easterly	388.5	--	--	---	1,577.43	H. F. Olds
Queen Street	Barton Street	King Street	5073	--	--	---	25,704.30	Hagersville
Rossllyn Avenue	Lawrence Road	Cumberland Avenue	2175	--	--	---	10,579.96	A. Cope & Sons
Robert Street	West Avenue	Victoria Avenue	619.5	--	--	---	2,632.88	A. Cope & Sons
Stuart Street	MacNab Street	Caroline Street	751	171.3	1853	635.6	15,430.53	Curran & Briggs
Walnut Street	King Street	Main Street	--	562.5	--	425.2	4,415.81	Curran & Briggs
Wentworth Street	King Street	Barton Street	2950.7	206.2	--	108.74	18,254.85	Curran & Briggs
West Avenue	King Street	Main Street	490.5	80	--	47.6	3,427.55	Curran & Briggs
Wilson Avenue	Sanford Avenue	Wentworth Street	1279.8	--	--	---	8,485.26	H. F. Olds
West 18th Street	Bendamere Avenue	150' Southerly	140	--	--	---	693.00	
Totals			51,355.9	10,139.1	24,234.5	19,887.80	\$472,326.99	

<u>Street</u>	<u>From</u>	<u>To</u>	<u>Length of C.W.&C. in ft.</u>	<u>Length of Monolithic curb in ft.</u>	<u>Length of Curb Only in ft.</u>	<u>Repairs in sq. ft.</u>	<u>Total Cost</u>	<u>Contractor</u>
<u>Concrete Walk and Independent Curb</u>								
Gerrard Street	Sherman Avenue	Birch Avenue	1075	--	--	--	7,777.65	Baldasaro & MacGregor
McAmulty Boulevard	Kenilworth Avenue	Ottawa Street	4087	--	--	--	28,215.90	Baldasaro & MacGregor
Ottawa Street	Main Street	Dunsmure Road	630	--	--	--	6,142.50	A. Cope & Sons
		Totals	5792				\$42,136.05	
		Grand Totals	57,147.9				\$514,463.04	

LOCAL IMPROVEMENTS SIDEWALKS CONSTRUCTED IN 1960

<u>Street</u>	<u>From</u>	<u>To</u>	<u>Side</u>	<u>Type</u>	<u>Length in ft.</u>	<u>Width in ft.</u>	<u>Total Cost</u>	<u>Contractor</u>	<u>Contract Number</u>
Britannia Avenue	Parkdale Avenue	Glennie Avenue	North	C.W.&C.	220	5'0"	995.00	A. Cope & Sons	R-60-16
Britannia Avenue	Parkdale Avenue	Glennie Avenue	South	"	220	"	995.00	A. Cope & Sons	R-60-16
Britannia Avenue	Ivon Avenue	Approx. 100' E'ly	North	"	120	"	553.00	A. Cope & Sons	R-60-16
Britannia Avenue	Ivon Avenue	Approx. 100' E'ly	South	"	120	"	553.00	A. Cope & Sons	R-60-16
Cheryl Avenue	East 32nd Street	East 34th Street	North	"	450	"	2,073.00	A. Cope & Sons	R-60-16
Cheryl Avenue	East 33rd Street	East 34th Street	South	"	220	"	982.00	A. Cope & Sons	R-60-16
Dumbarton Avenue	Aberfoyle Avenue	East Drive	North	"	230	"	1,038.00	A. Cope & Sons	R-60-16
East 5th Street	Inverness Avenue	Queensdale Avenue	East	"	650	"	2,955.00	A. Cope & Sons	R-60-16
East 5th Street	Inverness Avenue	Queensdale Avenue	West	"	650	"	2,955.00	A. Cope & Sons	R-60-16
East 8th Street	Inverness Avenue	400' south of Inverness	East	"	390	"	2,196.00	A. Cope & Sons	R-60-16
East 8th Street	Queensdale Avenue	Approx. 281' N'ly	East	"	300	"	1,301.00	A. Cope & Sons	R-60-16
East 9th Street	S. limit of Lot #27 Patricia Hts. Fennell Avenue	Approx. 300' S'ly	East	"	300	"	1,356.00	A. Cope & Sons	R-60-16
East 22nd Street	Fennell Avenue	MacLennan Avenue	West	"	500	"	2,204.00	A. Cope & Sons	R-60-16
Franklin Road	East 25th Street	Approx. 266' W'ly	South	"	290	"	1,247.00	A. Cope & Sons	R-60-16
Green Meadow Road	Queensdale Avenue	261' Southerly	East	"	267.5	"	936.55	Morton Const. Co.	1959
Lang Street	Reid Avenue	Main Street	Both	"	1911.5	"	7,374.40	Morton Const. Co.	R-60-10
Mead Avenue	Parkdale Avenue	Knox Avenue	South	"	1534	"	7,014.45	Griffith & Crane	R-60-10
Mountville Avenue	East 16th Street	East 18th Street	South	"	500	"	2,316.00	A. Cope & Sons	R-60-16
Ofield Road	Main Street West	Lower Horning Road	North	"	260	"	1,198.00	A. Cope & Sons	R-60-16
Ofield Road	Main Street West	Lower Horning Road	South	"	280	"	1,304.00	A. Cope & Sons	R-60-16
Robroy Avenue	Potruff Road	Approx. 150' East of Gailmont	North	"	780	"	3,494.00	A. Cope & Sons	R-60-16

<u>Street</u>	<u>From</u>	<u>To</u>	<u>Side</u>	<u>Type</u>	<u>Length in ft.</u>	<u>Width in ft.</u>	<u>Total Cost</u>	<u>Contractor</u>	<u>Contract Number</u>
Rendell Boulevard	Queensdale Avenue	270' Southerly	East	C.W.&C.	268	5'0"	1,203.71	Hagersville Paving	
Rendell Boulevard	Brucedale Avenue	130' Northerly	East	"	157	"	693.25	Hagersville Paving	
Reid Avenue	Lang Street	N. limit of Survey	East	"	125	"	483.75	Morton Const. Co.	
Seventh Avenue	East 34th Street	East 36th Street	North	"	320	"	1,426.00	A. Cope & Sons	R-60-16
Tenth Avenue	Upper Ottawa Street	Approx. 32' W. of Fernwood Crescent	South	"	300	"	1,390.00	A. Cope & Sons	R-60-16
West 23rd Street	Bendamere Avenue	Approx. 465' N'ly	West	"	450	"	2,050.00	A. Cope & Sons	R-60-16
			Total		11,813		\$52,297.11		
<u>Concrete Walk and Independent Curb</u>									
(incomplete) Fennell Avenue	Garth Street	West 5th Street	South	C.W.&I.C.	1570	5'0"	9,840.40	A. Cope & Sons	R-60-16
Main Street West	West Park Avenue	850' W'ly from West Park	North	"	700	"	4,722.50	A. Cope & Sons	R-60-16
			Total		2,270		\$ 14,562.90		
<u>Concrete Walk Only</u>									
Burlington Street	Depew Street	Approx. 191' E'ly	North	Walk Only	130	5'0"	422.50	A. Cope & Sons	R-60-16
King Street West	West Park Avenue	Westbourne Road	South	"	300	"	1,072.50	A. Cope & Sons	R-60-16
Main Street East	Armstrong Place	Approx. 550' W'ly	South	"	482.5	"	1,640.50	Morton Const. Co.	R-60-10
			Total		912.5		\$3,135.50		
<u>Concrete Curb Only</u>									
Burbank Court	Robroy Avenue	N. end of Ct.	Both	Curb Only	480	6"	1,490.00	A. Cope & Sons	R-60-16
Burbank Place	Carene Avenue	S. end of Ct.	Both	"	480	"	1,490.00	A. Cope & Sons	R-60-16

<u>Street</u>	<u>From</u>	<u>To</u>	<u>Side</u>	<u>Type</u>	<u>Length in ft.</u>	<u>Width in ft.</u>	<u>Total Cost</u>	<u>Contractor</u>	<u>Contract Number</u>
Cherry Road	Pottruff Road	W'ly end of St.	North	Curb Only	300	6"	700.00	A. Cope & Sons	R-60-16
Cherry Road	Pottruff Road	W'ly end of St.	South	"	250	"	587.50	A. Cope & Sons	R-60-16
Depew Street	Beach Road	C.N.R. Right- of-Way	East	"	180	"	405.00	A. Cope & Sons	R-60-16
Main Street East	Armstrong Place	550' W'ly	South	"	132.5	"	298.12	Morton Const. Co.	R-60-10
Scenic Drive	Denlow Avenue	West 35th Street	North	"	2860	"	5,319.60	Morton Const. Co.	1958
Scenic Drive	Denlow Avenue	West 35th Street	South	"	2640	"	4,910.40	Morton Const. Co.	1958
Scenic Drive	Eighth Avenue	550' Northerly	West	"	838	"	1,885.50	Morton Const. Co.	Cge. Or. #1
Scenic Drive	Eighth Avenue	550' Northerly	East	"	818	"	1,840.50	Morton Const. Co.	Cge. Or. #1
			Total		8,978.5		\$18,926.62		
			Grand Total				\$88,922.13		
			for Local		23,974				
			Improvement Works						

MOHAWK PARK SURVEY

SIDEWALKS CONSTRUCTED IN 1960

<u>Street</u>	<u>From</u>	<u>To</u>	<u>Side</u>	<u>Type</u>	<u>Length in ft.</u>	<u>Width in ft.</u>	<u>Total Cost</u>	<u>Contractor</u>	<u>Contract Number</u>
<u>Combined Walk and Curb</u>									
East 25th Street	Burkholder Drive	Approx. 100' S'y	East	C.W.&C.	133	5'0"	762.04	Curran & Briggs	R-60-18
Gildea Street	East 25th Street	E. end of Survey	North	"	141.5	"	823.37	Curran & Briggs	R-60-18
Gildea Street	East 25th Street	E. end of Survey	South	"	161.5	"	969.18	Curran & Briggs	R-60-18
Seeley Avenue	East 25th Street	E. end of Survey	North	"	262	"	1,541.61	Curran & Briggs	R-60-18
Seeley Avenue	East 25th Street	E. end of Survey	South	"	280	"	1,656.51	Curran & Briggs	R-60-18
		Totals			978		\$5,752.71		
<u>Concrete Walk and Independent Curb</u>									
East 21st Street	N. Limit of Lot 176	N. Limit of L. 172	East	C.W.&I.C.	172	5'0"	1,793.64	Curran & Briggs	R-60-18
East 21st Street	N. Limit of Lot 54	N. Limit of L. 50	West	"	173	"	1,565.04	Curran & Briggs	R-60-18
East 22nd Street	N. Limit of Lot 209	N. Limit of L. 205	East	"	152	"	1,763.84	Curran & Briggs	R-60-18
East 22nd Street	N. Limit of Lot 200	N. Limit of L. 204	West	"	151.2	"	1,424.75	Curran & Briggs	R-60-18
East 23rd Street	N. Limit of Lot 242	N. Limit of L. 238	East	"	173	"	1,947.50	Curran & Briggs	R-60-18
East 23rd Street	N. Limit of Lot 233	N. Limit of L. 237	West	"	149	"	1,451.73	Curran & Briggs	R-60-18
East 24th Street	N. Limit of Lot 274	N. Limit of L. 270	East	"	172	"	1,905.75	Curran & Briggs	R-60-18
East 24th Street	N. Limit of Lot 265	N. Limit of L. 269	West	"	181	"	1,981.91	Curran & Briggs	R-60-18
East 25th Street	Approx. 100' South of Burkholder	Approx. 215' North of Mohawk Road	East	"	713.5	"	6,502.23	Curran & Briggs	R-60-18
		Totals			2,036.7		\$20,336.39		
<u>Concrete Walk Only</u>									
Burkholder Drive	Indian Crescent	East 25th Street	E&S	Walk Only	1162.5	5'0"	4,261.79	Curran & Briggs	R-60-18
Burkholder Drive	Indian Crescent	East 25th Street	W&N	"	1348.6	"	4,775.47	Curran & Briggs	R-60-18

<u>Street</u>	<u>From</u>	<u>To</u>	<u>Side</u>	<u>Type</u>	<u>Length in ft.</u>	<u>Width in ft.</u>	<u>Total Cost</u>	<u>Contractor</u>	<u>Contract Number</u>
Dolphin Drive	Franklin Road	East 24th Street	E&N	Walk Only	1051.6	5'0"	3,814.02	Curran & Briggs	R-60-18
Dolphin Drive	Franklin Road	East 24th Street	W&S	"	1053	"	3,902.20	Curran & Briggs	R-60-18
East 21st Street	Franklin Road	N. Limit of L. 176	East	"	490.5	"	1,812.63	Curran & Briggs	R-60-18
East 21st Street	Franklin Road	N. Limit of L. 54	West	"	486.5	"	1,836.47	Curran & Briggs	R-60-18
East 22nd Street	Franklin Road	N. Limit of L. 209	East	"	491	"	1,827.66	Curran & Briggs	R-60-18
East 22nd Street	Franklin Road	N. Limit of L. 200	West	"	495.7	"	1,863.52	Curran & Briggs	R-60-18
East 23rd Street	Franklin Road	N. Limit of L. 242	East	"	458	"	1,691.68	Curran & Briggs	R-60-18
East 23rd Street	Franklin Road	N. Limit of L. 233	West	"	484	"	1,796.84	Curran & Briggs	R-60-18
East 24th Street	Wentworth Street	N. Limit of L. 265	N&W	"	2196.8	"	7,645.05	Curran & Briggs	R-60-18
East 24th Street	Wentworth Street	N. Limit of L. 274	S&E	"	2221.2	"	8,457.20	Curran & Briggs	R-60-18
East 25th Street	Mohawk Road	Approx. 215' N. of Mohawk Road	East	"	237.5	"	863.35	Curran & Briggs	R-60-18
East 25th Street	Mohawk Road	Burkholder Drive	West	"	1284.4	"	4,688.62	Curran & Briggs	R-60-18
Franklin Road	Wentworth Street	East 24th Street	North	"	1270.2	"	4,569.69	Curran & Briggs	R-60-18
Franklin Road	East 24th Street	E. end of Survey	North	"	154.5	4'6"	552.31	Curran & Briggs	R-60-18
Franklin Road	Wentworth Street	East 24th Street	South	"	1121	5'0"	4,062.79	Curran & Briggs	R-60-18
Franklin Road	East 24th Street	E. end of Survey	South	"	168.5	4'6"	581.33	Curran & Briggs	R-60-18
Garden Avenue	Dolphin Drive	East 24th Street	North	"	656.5	5'0"	2,415.89	Curran & Briggs	R-60-18
Garden Avenue	Dolphin Drive	East 24th Street	South	"	632	"	2,312.02	Curran & Briggs	R-60-18
Halam Avenue	East 24th Street	E. end of Survey	North	"	113.5	4'6"	410.33	Curran & Briggs	R-60-18
Halam Avenue	East 24th Street	E. end of Survey	South	"	115.7	"	420.27	Curran & Briggs	R-60-18
Indian Crescent	East 25th Street	Burkholder Drive	NE&S	"	1707.8	5'0"	6,183.29	Curran & Briggs	R-60-18
Indian Crescent	East 25th Street	Burkholder Drive	SW&N	"	1836.6	"	7,109.92	Curran & Briggs	R-60-18
Mohawk Road	Approx. 165' E. of Wentworth Street	Approx. 90' E. of East 25th Street	North	"	950.2	"	3,493.26	Curran & Briggs	R-60-18
Scott Avenue	East 24th Street	S. end of Street	East	"	390.3	"	1,438.60	Curran & Briggs	R-60-18
Scott Avenue	East 24th Street	S. end of Street	West	"	418.5	"	1,546.11	Curran & Briggs	R-60-18
		Totals			22,996.6		\$84,332.31		
		Grand Totals			26,011.3		\$110,421.41		

SUBDIVISION SIDEWALKS CONSTRUCTED IN 1960

<u>Street</u>	<u>From</u>	<u>To</u>	<u>Side</u>	<u>Type</u>	<u>Length in ft.</u>	<u>Width in ft.</u>	<u>Total Cost</u>	<u>Contractor</u>
<u>Seager Survey</u>								
Rifle Range Road	Approx. 360' N. of Iona Avenue	N. Limit of Survey	West	C.W.&C.	221	5'0"	1,178.75	H. F. Olds
<u>Cloke Park Survey</u>								
Brucedale Avenue	East 45th Street	Rendell Boulevard	South	C.W.&I.C.	669	5'0"	4,180.45	Hagersville Paving
Cloke Court	Rendell Boulevard	Rendell Boulevard	SE&N	C.W.&C.	968	"	3,721.30	Hagersville Paving
Cloke Court	Rendell Boulevard	Rendell Boulevard	SW&N	"	1125	"	4,397.50	Hagersville Paving
East 45th Street	Brucedale Avenue	Fennell Avenue	East	"	735	"	2,868.50	Hagersville Paving
Rendell Boulevard	Brucedale Avenue	Fennell Avenue	West	"	710.5	"	2,691.30	Hagersville Paving
<u>Thames Park Survey</u>								
West 3rd Street	Approx. 207' S. of Richwill	S. end of Court	Both	"	184.5	"	1,002.65	H. F. Olds
<u>Westchester Park #1</u>								
Westaway Place	Sanatorium Road	W. end of Survey	E&S	C.W.&C.	441.5	5'0"	1,949.08	H. F. Olds
Westaway Place	Sanatorium Road	W. end of Survey	W&N	"	373.5	"	1,620.13	H. F. Olds
<u>Franklin Park Annex</u>								
Rendell Boulevard	Approx. 130' N. of Brucedale	N. Limit of Subdiv. East	East	C.W.&C.	331	5'0"	1,446.00	Hagersville Paving
<u>Welco Park Survey</u>								
East 13th Street	Approx. 44' S. of Callie Road	Approx. 440' S'ly	East	C.W.&C.	427	5'0"	1,645.60	Morton Const. Company
Grand Totals =					6,186		\$26,701.26	

SIDEWALKS CONSTRUCTION IN 1960

<u>Street</u>	<u>From</u>	<u>To</u>	<u>Side</u>	<u>Type</u>	<u>Length in ft.</u>	<u>Width in ft.</u>	<u>Contractor</u>	<u>Contract Number</u>
<u>Buchanan Park</u>								
Algoma Crescent	Laurier Avenue	Laurier Avenue	NE&S	C.W.&C.	1250	5'0"	Hagersville Paving	R-60-14
Algoma Crescent	Laurier Avenue	Laurier Avenue	NW&S	"	1110.8	"	Hagersville Paving	R-60-14
Bendamere Avenue	Columbia Drive	W. Limit of Survey	South	"	965	"	Hagersville Paving	R-60-14
Bendamere Avenue	Columbia Drive	W. Limit of Survey	North	"	872.8	"	Hagersville Paving	R-60-14
Collier Crescent	South Bend Road	South Bend Road	ES&W	"	1085	"	Hagersville Paving	R-60-14
Collier Crescent	South Bend Road	South Bend Road	EN&W	"	1218.6	"	Hagersville Paving	R-60-14
Columbia Drive	Bendamere Avenue	N. end of Survey	EN&W	"	3332.8	"	Hagersville Paving	R-60-14
Columbia Drive	Bendamere Avenue	N. end of Survey	ES&W	"	3462.2	"	Hagersville Paving	R-60-14
Delmar Drive	Columbia Drive	Laurier Avenue	SW&N	"	2163	"	Hagersville Paving	R-60-14
Delmar Drive	Columbia Drive	Laurier Avenue	SE&N	"	2281.6	"	Hagersville Paving	R-60-14
Hudson Court	Columbia Drive	W. Limit of Court	Both	"	446	"	Hagersville Paving	R-60-14
Laurier Avenue	Columbia Drive	700' S. of South Bend Road	N. EN&W	"	2646.3	"	Hagersville Paving	R-60-14
Laurier Avenue	Columbia Drive	810' S. of South Bend Road	S. WS&E	"	2679.4	"	Hagersville Paving	R 60-14
Laurier Avenue (east leg)	South Bend Road	Approx. 60' S. of South Bend Road	East	"	64.7	"	Hagersville Paving	R-60-14
Laurier Avenue (east leg)	South Bend Road	Approx. 105' S. of South Bend Road	West	"	115	"	Hagersville Paving	R-60-14
Leadale Place	Stacey Street	S. Limit of Street	Both	"	1234.7	"	Hagersville Paving	R-60-14
Marcus Street	San. Road	Columbia Drive	West	"	220.8	"	Hagersville Paving	R-60-14
Marcus Street	San. Road	Columbia Drive	East	"	224.5	"	Hagersville Paving	R-60-14
Neyer Street	Mohawk Road	Laurier Avenue	West	"	238	"	Hagersville Paving	R-60-14
Neyer Street	Mohawk Road	Laurier Avenue	East	"	223.3	"	Hagersville Paving	R-60-14

<u>Street</u>	<u>From</u>	<u>To</u>	<u>Side</u>	<u>Type</u>	<u>Length in ft.</u>	<u>Width in ft.</u>	<u>Contractor</u>	<u>Contract Number</u>
Stacey Street	Columbia Drive	Laurier Avenue	South	C.W.&C.	497.2	5'0"	Hagersville Paving	R-60-14
Stacey Street	Columbia Drive	Laurier Avenue	North	"	527.2	"	Hagersville Paving	R-60-14
South Bend Road	West 5th Street	Laurier Avenue	North	"	951.5	"	Hagersville Paving	R-60-14
South Bend Road	West 5th Street	Laurier Avenue	South	"	996.5	"	Hagersville Paving	R-60-14
Tyne Place	Columbia Drive	Columbia Drive	N&W	"	460	"	Hagersville Paving	R-60-14
Verona Place	Columbia Drive	E'y end of St.	Both	"	1073.8	"	Hagersville Paving	R-60-14
Block "H" (Easement)	Delmar Drive	Laurier Avenue		Walk Only	287.5	5'0"	Hagersville Paving	R-60-14
Block "I" (Easement)	Delmar Drive	Collier Crescent		"	<u>232.3</u>	"	Hagersville Paving	R-60-14
				Total	30,860.5			
				Total Cost	<u>\$ 168,525.59</u>			

REPORT OF THE CITY SURVEYOR

The Survey Section experienced a heavy volume of work during the year 1960 particularly due to:

- (a) the recent large annexation effective January 1st of all of the remaining part of Barton Township and portions of Ancaster, Saltfleet and Glanford Townships.
- (b) the increased number of projects planned and commenced by the Department of Engineering.

Work was continued on such projects as the Chedoke Expressway, where several expropriation by-laws were amended and altered. Surveys were made for the acquisition of the required right-of-way lands from many owners, for example, Canadian Westinghouse, The Roman Catholic Episcopal Corporation, Frid Brothers, Hillfield School and others.

More surveys were made for the acquisition of lands for park and school sites in Barton and in the parts of Saltfleet Township included in the annexation, with nine sites surveyed, descriptions and plans prepared and the lands acquired.

Surveys were made for the projects as set out below, together with many others carried over from previous years.

- (1) the Burlington-Woodward Interchange
- (2) Kenilworth Avenue off-street Parking area

- (3) the widening of Rifle Range Road south of Main Street West
- (4) the Hamilton General Hospital land acquisition for a parking lot
- (5) the acquisition of lands for the proposed Claremont Mountain Access
- (6) the widening of Mohawk Road West

Several additional 1'-0" Reserves were incorporated into the street allowances by by-law and a few streets were widened or altered, for example, Cannon Street at Melrose, Concession Street at Upper Wellington Street, Hester Street east of Upper James Street, West 5th Street north of Fennell Avenue.

There were many expropriations in 1960, for which plans were drawn and descriptions written other than those for the Chedoke Expressway etc. Several of these were in connection with the proposed installation of new sewers in the annexation area south of Mohawk Road east of Upper Sherman Avenue, as well as, Luscombe Street, Nash Road north of Barton Street and others. Expropriation by-laws were also passed for the acquisition of lands for the proposed Queen Elizabeth Way Service Road located south of the Queen Elizabeth Way, as well as a proposed service road located north of Barton Street and east of Nash Road.

Surveys were made for a variety of purposes at the request of various other Departments, largely the

Solicitors Department, as well as other sections of the Department of Engineering. These included:

(a) Topographical Surveys

- (i) proposed Recreation Sites in Huntington Park on the Mountain
- (ii) for Steel Playground in the east end of the City

(b) Land Surveys

- (i) for the sale of City owned premises at 44 Hughson Street North, being the original City of Hamilton Central Fire Hall, built in 1875, formerly occupied by various City Departments including the Department of Engineering
- (ii) for the sale of land to Columbian Carbon Limited
- (iii) for the site of the proposed Reservoir located at Stone Church Road and Garth Street
- (iv) closing part of Plymouth and Depew Streets
- (v) closing part of Dickson Street
- (vi) the acquisition of lands on Luscombe Street
- (vii) the sale of part of the City Yard at Parkdale and Rennie Streets
- (viii) the purchase of all the lands of the Hamilton Street Railway
- (ix) the acquisition of land on Clapham Road

Two of the larger surveys undertaken and completed in 1960, were a complete topographical and legal survey of Burlington Street from Bay Street to Kenilworth

Avenue, a survey to widen and alter Station Road between Stone Church Road and Highway No. 53.

The program begun in 1960 to resurface and reconstruct many of the older roads and sidewalks in the City necessitated locating and establishing existing survey points marking street intersections. As most of these points were on or near sidewalks or referred to the sidewalks and would therefore be destroyed during reconstruction, they had to be re-referenced and relocated after the new walks were constructed. Since the majority of these survey points were established by Ontario Land Surveyors in private practise and are constantly used by them and ourselves, it is important that the Department insure that the locations of these points be not lost. This work is being carried out when notification is received of sidewalk reconstruction or alteration. Due to the proposed enlargement of the reconstruction program this aspect of our work will be of continued importance in the future.

During February, I was able to attend the convention of the Association of Ontario Land Surveyors, who, for the first time in 68 years, assembled at Hamilton. The main theme of the convention was the possibility of interesting the various levels of government in setting up the necessary framework of triangulation for control surveys. This system is widely used in other countries and is becoming necessary in

Ontario through the continued difficulty of establishing original corners. This may lead to a revision of the methods of survey to be used in the future.

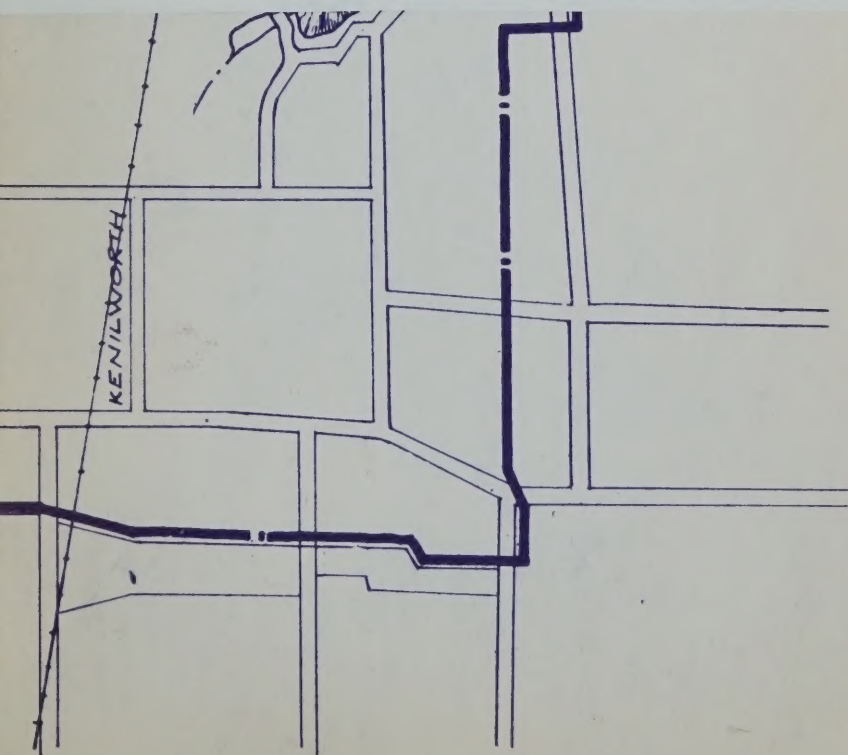
The public is becoming more aware of the Line Fences Act and the increasing number of requests from citizens for assistance in settling these fence disputes under this act, continues to demand much of my time as a Fence Viewer. There are 3 Fence Viewers, myself, A. R. Campaigne and T. W. Dowling. In many cases, it is possible to arrange an amiable settlement between neighbours without resorting to legal methods.

The efforts of my staff in coping with the large volume of work carried out in 1960 is worthy of note.

Respectfully submitted,

A. H. GREENLEES

City Surveyor.



CITY OF CITY ENGINEER WATERWORKS	
WATER WORKS	
SCALES: NOT TO SCALE.	
DESIGN ENGINEER:	<i>P. M.</i>
WATERWORKS ENG'R:	<i>129</i>
DEPUTY CITY ENG'R:	<i>P. M.</i>
APPROVED:	<i>W. A. H.</i> CITY
PLAN NO:	R 65.W.W.

CITY OF HAMILTON

LAKE ONTARIO
HAMILTON HARBOUR

BEACH PUMP STA. & FILTRATION PLANT

EMERSON PUMP STA.

FERGUSON PUMP STA.

BARTON PUMP STA.

COCHRANE PUMP STA.

MOUNTAIN RESERVOIR CAP. 13.4 MG.

HIGH LEVEL RESERVOIR CAP. 43 MG.

BARTON RESERVOIR CAP. 11 MG.

GREEN HILL RESERVOIR CAP. 10 MG.

WEST 30TH EL. TANK CAP. 1.25 MG.

FENNELT EL. TANK CAP. 7.5 MG.

FENNELT EL. TANK CAP. 1.25 MG.

MIDDLE LEVEL DISTRICT

HIGH LEVEL DISTRICT

MOUNTAIN LEVEL DISTRICT

KINGS FOREST PARK LEVEL DISTRICT

LAKE ONTARIO

HYDRO ELECTRIC POWER LINE

PLAN NO. R 65. W.W.

**CITY OF HAMILTON
ENGINEERS' DEPARTMENT
WATERWORKS**

WATER WORKS SYSTEM.

SCALE: NOT TO SCALE.

DESIGN ENGINEER: P. Mank

WATERWORKS ENGR: J. B. Cray

DEPUTY CITY ENGR: J. B. Cray

APPROVED: W. A. Wheten

CITY ENGINEER

DATE: 1960

REGISTERED PROFESSIONAL ENGINEER
W. A. WHETEN
PROVINCE OF ONTARIO

SHEET: 1 OF

SHEET: 1 OF

REGISTERED PROFESSIONAL ENGINEER
W. A. WHETEN
PROVINCE OF ONTARIO

UNIVERSITY OF ILLINOIS-URBANA



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